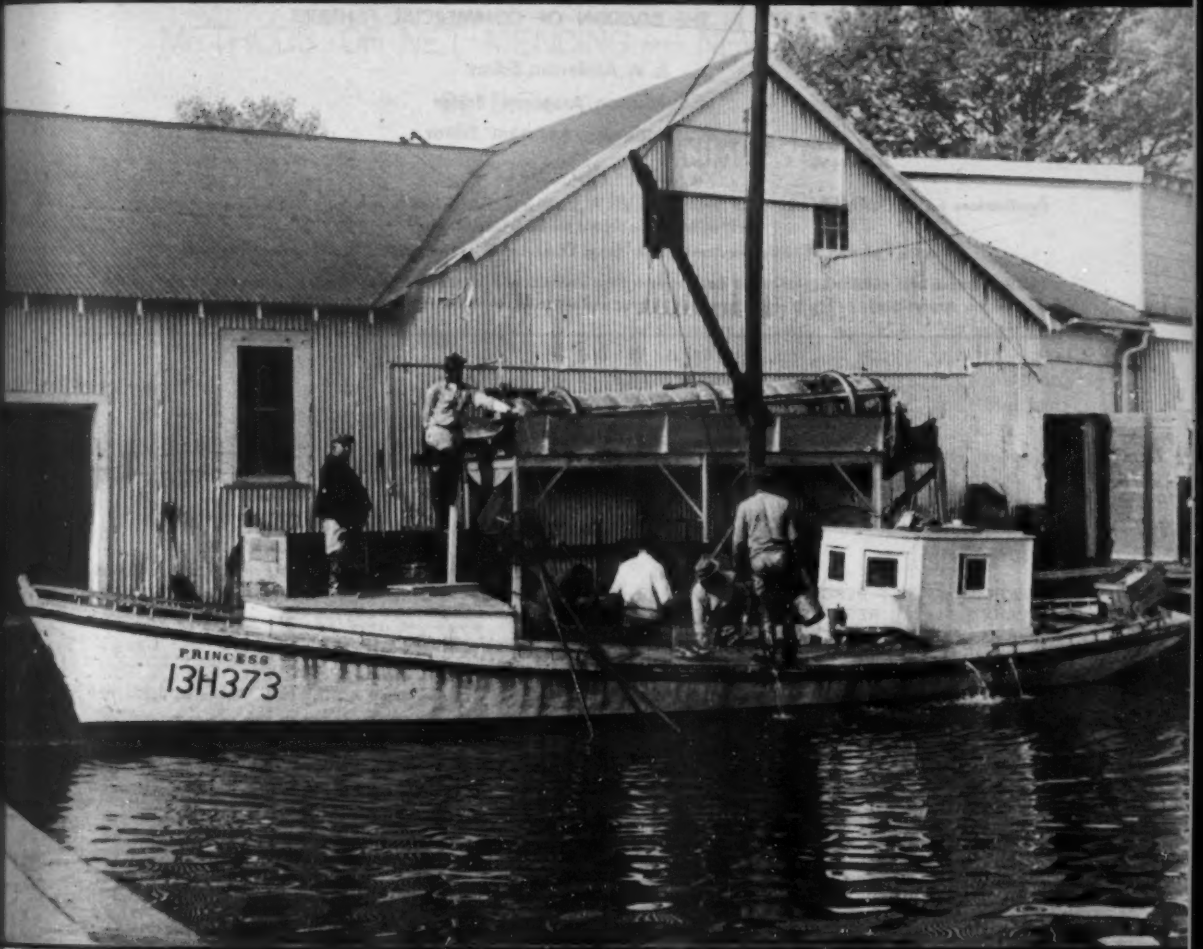


COMMERCIAL FISHERIES REVIEW



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PREPARED IN THE DIVISION OF COMMERCIAL FISHERIES

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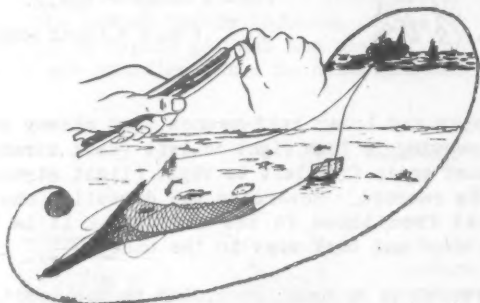
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Vol. 9, No.3

METHODS OF NET MENDING -- NEW ENGLAND^{1/}

By Boris O. Knake*

INTRODUCTION



Net mending has been practiced by fishermen for centuries. There are many known methods of mending nets throughout the world but all are basically similar. This publication describes the methods of net mending as practiced by the New England otter trawl fishermen.

In otter trawl fishing, the crew must mend the nets night and day under the difficult conditions of cramped space, awkward positions, rolling seas, decks awash, rain, snow, and bitter weather. Whenever a tear is found, which usually occurs everytime the net is hauled in, it must be mended. Because of these conditions, a mending method suited to trawl fishing has been developed.

Most nets are made by machines, but since the mending of these nets must be done by hand, this probably will remain always a part of the fisherman's work.



MENDING NETS AT SEA

^{1/}This is Part I of a two-part article on this subject. The second part will appear in a subsequent issue.

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PART I--FUNDAMENTAL PRINCIPLES AND SIMPLE MENDING

TERMS USED IN NET MENDING

Fish netting or webbing is a sequence of loops, known also as bights or half-meshes, which are interwoven by knots. These form a series of meshes as shown in Figure 1. The knot is known as the sheet-bend-hitch, weavers' knot, fishermen's knot, or mesh knot.

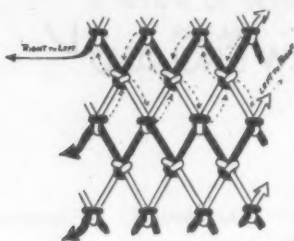


FIG. 1 - FISH NETTING

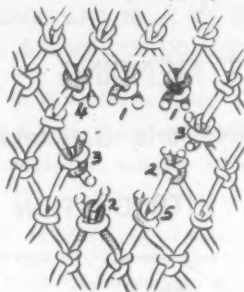


FIG. 2 - DAMAGED AREA

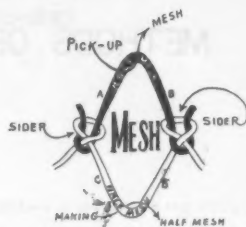


FIG. 3 - SINGLE MESH

A single mesh is the combined upper and lower half-meshes tied midway by a hitch. As illustrated in Figure 1, the weaving is from right to left (dark strands) to the number of meshes required, and back again from left to right (light strands) and so forth until the desired depth is reached. Reversing the direction causes the knots in one row to look different from those in the next row. It is the same knot, however--front view in one case and back view in the other.

In net repairing, the knot is referred to by name, according to the position it has in the damaged area. As numbered in Figure 2, the names used are:

- | | |
|----------------------------|--------------------------|
| (1) Mesh knot | (3) Sider knot |
| (2) Pick-up knot | (4) Starter three-legger |
| (5) Finishing three-legger | |

DEFINITIONS OF KNOTS

1. Mesh knot--also referred to as a half-mesh knot; that is, in making a half mesh a mesh knot is tied. The white lower half (Figure 3) is the half mesh; C and D are the legs of the half mesh. After a knot is tied the legs are referred to as bars or strands.

2. Pick-up knot--a knot tied to a half mesh on the base or the lower part of the damage. Tying the lower mesh forms the pick-up knot on the pick-up mesh. The pick-up mesh is shown in black in Figure 3. The legs of the pick-up mesh are A and B.

3. Sider knot--refers to a knot of two separate strands as shown in Figure 3. These are only found on the sides of the damage; that is, on either side of the webbing when held or hung straight. Sider knots are of two types, called "sider on the left" or "sider on the right" depending on which side of the damage they are located.

4. Starter three-legger--a knot having three strands intact and only one strand cut off (4 in Figure 2).

5. Finishing three-legger--a similar type knot to the starter three-legger (5 in Figure 2). The importance of the three-legger knots is that the mending is started and finished on those knots. This particular point cannot be over-emphasized.

NET SIZE

Netting is designated by the size of the mesh in a stretched form (Figure 4) and is measured by the number of meshes in length and in depth. The length is often expressed in feet or fathoms when a large quantity is ordered.

The stretched mesh size (A in Figure 4) is a recognized method of measuring by the manufacturers. The length of the bar, leg, or strand (B in Figure 4), the actual inside opening of the mesh (C in Figure 4), and the size of knot (D in Figure 4), are units of measure which are sometimes used in netting specifications.



FIG. 4 - MESH MEASUREMENTS

NET DAMAGE INSPECTION



FIGURE 5
STRAIGHT TWINE

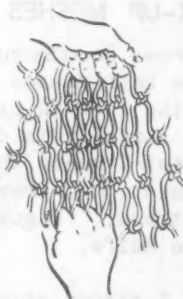


FIGURE 6
CROSSTWINE

The first step in repairing damage to a net is to determine the type and the extent of the damage, so that the best mending procedure can be decided upon. The proper procedure allows the mender to restore the meshes by weaving in an uninterrupted sequence. The next step is to determine the trimming necessary. To do this, the damaged section of the net is stretched so that the strands line up easily. This is referred to as "straight twine" (Figure 5).

The wrong way to stretch netting is known as "crosstwine" (Figure 6). Note how the strands tend to loop. To further illustrate trimming, Figure 7 shows a damaged section

with several broken strands (dark section). In correctly trimming this type of damage all the dark shaded twine must be cut out as shown in Figure 8. Usually the resulting stumps in the half meshes and pick-ups are removed by cutting them out, when there is sufficient time for it. This serves two purposes. The mending will look neater because of the reduction in the number of bulky knots, and also in mending badly torn nets it helps the mender to avoid mistaking the half-mesh knot for the slider knot which would result in a disorder of the mesh sequences known as "getting into crosstwine." If this mistake is made it will be necessary to cut out the repaired meshes and start all over again. Figure 9 represents a correctly trimmed hole ready for mending. Note that knots 6, 7, and 10 are missing. A detailed description of the mending procedure is given later.

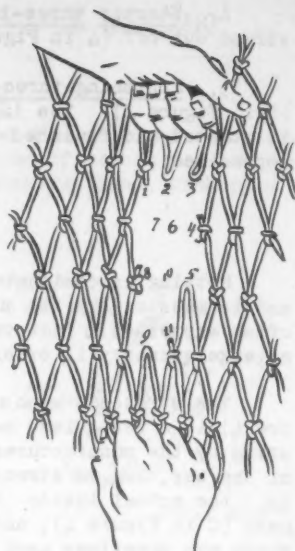
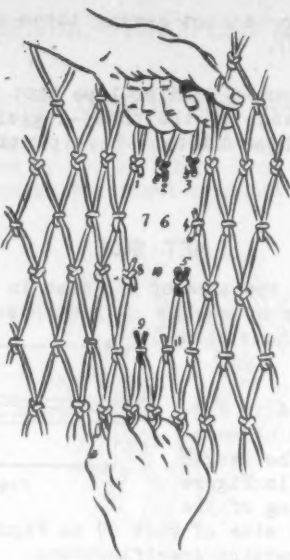
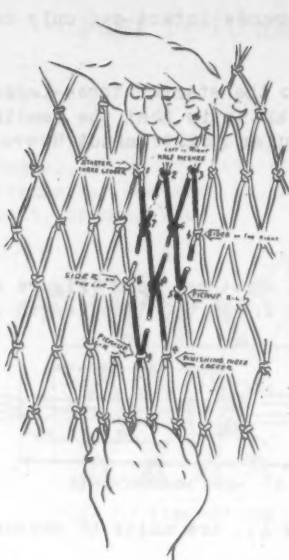


FIG. 7 - DAMAGED SECTION FIG. 8 - PARTIALLY TRIMMED FIG. 9 - CORRECTLY TRIMMED

METHOD FOR CUTTING OUT STUMPS IN THE HALF MESHES AND PICK-UP MESHES



FIG. 10 - POINT OF CUTS
method of cutting and the position of the knife.

Figure 10 shows how the cuts are made when cleaning up the half meshes and the pick-up meshes. When the loop AA is to be retained, cutting out the strand BB is done quite simply, by cutting at point C where the strand leg B-1 serves as a cushion, thus preventing injurious cuts on the A strand. Figure 11-A shows the

It is more difficult to cut off the A strand stump, which must be cut at point D, Figure 10. The knife is placed between the legs B-1 and B-2, so that the blade cuts between the two legs BB (Figure 11-B). This operation requires a little practice to get the feel of the snap, when the last fibre of stump AA has been cut without the knife reaching and injuring loop strand BB.

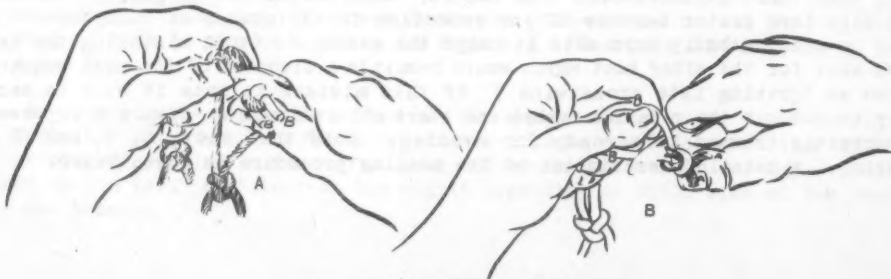


FIG. 11 - CUTTING OUT STUMPS

When trimming the unwanted strands, care must be taken not to cut the strands too close to the knot, on three-leggers and siders. These knots are not always firm and may untie. Therefore, at least a $\frac{1}{8}$ inch of strand should be left when trimming the knot. If cut too close they frequently will untie and it will then be impossible to retie them. Then the cutting of additional meshes will be required to regain the proper mending sequence.

FILLING THE NEEDLE

Only one special tool is required in net mending. This tool is known as a net needle or shuttle and is made of wood (ash, hickory, bamboo, or dogwood),

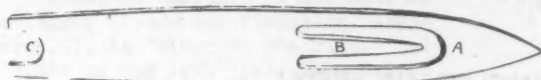


FIG. 12 - NET NEEDLE

metal, plastic, or even ivory. Figure 12 shows the shape of the net needle customarily used. A is the eye, B is the tongue, and C is the fork or heel. The size of the needle for mending depends upon the size of the mesh and the twine to be handled. The needle used to repair otter trawls is about 8 inches long by $\frac{1}{4}$ inch thick. Filling



FLEXIBLE
TONGUE
NEEDLE

FLEXIBLE EYE
NEEDLE

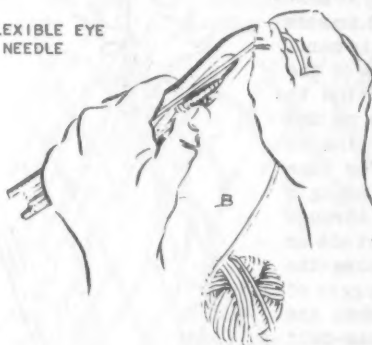


FIGURE 14

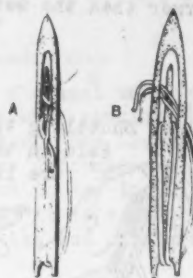


FIGURE 13
FILLING THE NEEDLE

"single needle" means that single twine is wound on the needle (Figure 13-A). The twine is wound over the tongue so that the short end is jammed under the long end, then the twine is wound under the heel and over the tongue on the other side of the needle and back under the heel, turning the needle in a rocking fashion each time the twine goes under the heel of the needle, until the needle is filled. Filling "double needle," means that instead of single twine, double twine is used (Figure 13-B). In starting to fill "double needle" a length of single twine sufficiently long to fill the needle is measured off. The twine is then doubled. The middle bight is placed over the tongue of the needle and the filling is done the same way as when single twine is used. Some needles have a flexible tongue. This makes it possible to push the tongue slightly outward permitting the twine to slide under it (Figure 14-A). In other types the eye of the needle is flexible. In filling this needle, the right thumb pushes the eye downward, passing the twine over the tongue (Figure 14-B).

MESH GAUGING

When mending nets the mesh size is gauged with the fingers of the left hand. The new mesh is constantly gauged for uniformity with the previous mesh. Figure

15 illustrates the use of the fingers in gauging the mesh size. Of course, this limits the size range of the mesh to the size of the hand, but this is quite satisfactory as the mesh sizes are usually more or less within that range. They can be varied a little by the tautness with which the twine is held. With some practice it becomes easy to gauge the mesh size almost precisely. When mending a wet net, it should be remembered that the twine has shrunk; therefore, the dry twine meshes mended in should be slightly larger than the wet net meshes.



FIG. 15 - GAUGING MESH SIZE

HANDLING THE NEEDLE

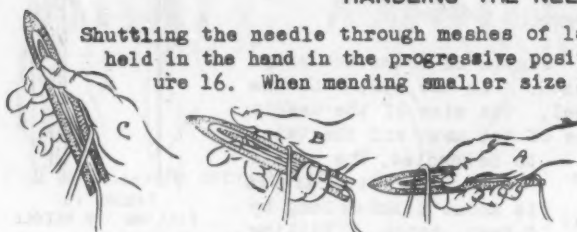


FIG. 16 - SHUTTling NEEDLE THROUGH LARGE MESHES

Shuttling the needle through meshes of large size, the needle is always held in the hand in the progressive positions A, B, and C, shown in Figure 16. When mending smaller size mesh, the needle remains secure in between the meshes, without slipping out. Sometimes the left hand forefinger may aid in holding the needle while changing the grip for the completion of the shuttling.

SUPPORTING THE NET FOR MENDING

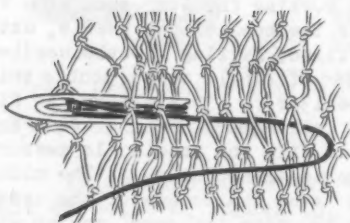


FIG. 17 - RUNNING SUPPORTING TWINE THROUGH MESHES

In starting to mend a damaged net, it is more convenient for the mender to tie the area of the damaged net section to something secure so that the meshes will line up easily. This is done very simply running a length of twine through the meshes about one or two meshes above the starter three-legger of the damage in the net (Figure 17). These meshes are tied in a bunch, and fastened with a slip-double-half hitch knot (A in Figure 18). The other end of the twine, B, is then secured to something solid that may be within easy reach. Often at sea when many meshes are damaged in a very large tear there will be someone who assists the mender by holding the net properly.

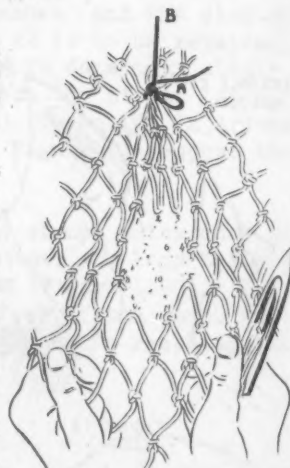


FIG. 18 - SUPPORTING DAMAGED NET

HOW TO MEND

In repairing damage to a net, there must be a definite starting point and a finishing point, both of which must be three-leggers. Figure 19-A shows a simple tear with only two three-leggers, which become the starter three-legger (1), and the finishing three-legger (11). Figure 19-B shows the starter knot completed and Figure 19-C shows the finishing knot with the damage repaired. Figure 20-A illustrates a tear known as "tear on the siders." Here, in addition to the starter three-legger (1) and the finishing three-legger (11), is "sider on the right" (4) and "sider on the left" (8). Figure 20-B shows the damage mended. Sider knots are very important as a signal to reverse the direction of shuttling on the mending procedure. Often when mending badly damaged nets where the netting has been under severe strain, the knots become deformed and hard to recognize. It is then good policy to cut the knot open to find out whether it is a mesh knot or sider. Sider signifies the end of the row.



FIG. 19 - SIMPLE TEAR

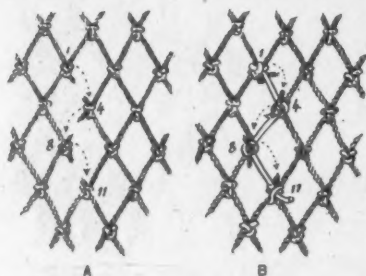


FIG. 20 - TEAR ON THE SIDERS

The tear shown in Figure 21-A is known as a "tear along the meshes." Here is the starter three-legger (1), and the finishing three-legger (11), in addition to the half mesh (2-3) and the pick-up mesh (9). In Figure 21-A the starter knot is on the left side of the tear, therefore, mending proceeds from left to right (Figure 21-B). In this case the needle is always taken from under the loop when making the tie. Figure 21-C shows a tear similar to that in Figure 21-A. The only difference is the location of the starter three-legger on

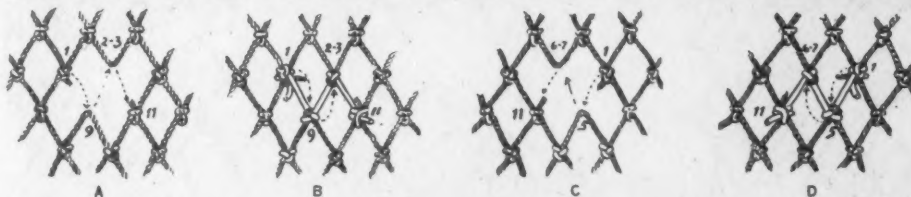


FIG. 21 - TEAR ALONG THE MESHES

the right side of the tear. Therefore, mending proceeds from right to left (Figure 21-D). In this case the needle is always inserted into the loop from above. If the mending direction is not carefully noted, the twine will not line up in the proper direction when each knot is made with the result that the knot will be upside down or twisted.

The smallest possible tear requiring all of the variations in mending is illustrated in Figure 22. Beginning with the starter three-legger (1), (also see Figure 23), the needle follows the arrow of the dotted line to the half mesh (2), (also see Figure 25), from there to another half mesh (3), then downward to the sider on the right (4), (also see Figure 27), which is the signal to reverse

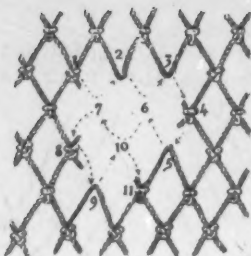
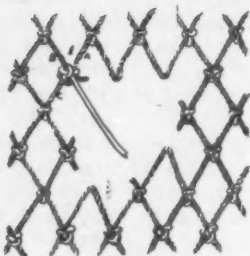


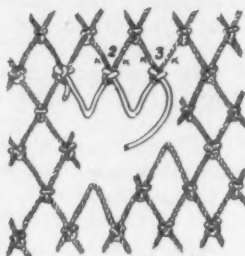
FIG. 22 - SMALLEST
TEAR REQUIRING
ALL MENDING
VARIATIONS

and mend from right to left. First the needle is shuttled through the pick-up mesh (5), (also see Figure 29), and then through the half mesh (6), (also see Figure 31), through another half mesh (7), and then downward to the sider on the left (8), (also see Figure 33), which is the indicator to reverse again and mend from left to right. Now the needle is shuttled through the pick-up mesh (9), (also see Figure 35), then through the half mesh (10), (also see Figure 25), and then downward to the finishing three-legger (11), (also see Figure 37). This completes the mending.

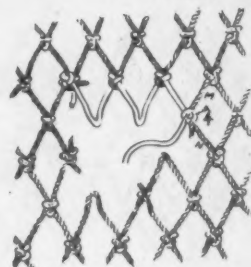
The sketches beginning on page 9 (Figures 23 to 38) illustrate step by step details of tying the various types of knots. The numbers in the sketches show the order in which the movements should be made. The tear illustrated is the same as the one shown in Figure 22. The knots as completed are illustrated below.



STARTER KNOT



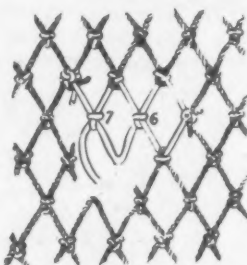
HALF-MESH KNOT - L TO R



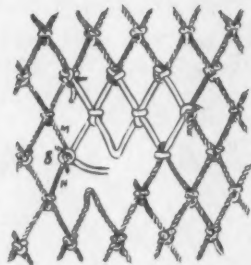
SIDER ON THE RIGHT



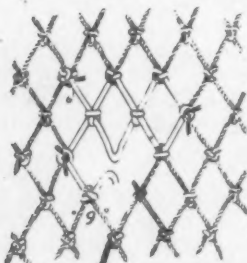
PICK-UP KNOT - R TO L



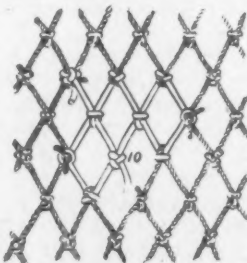
HALF-MESH KNOT - R TO L



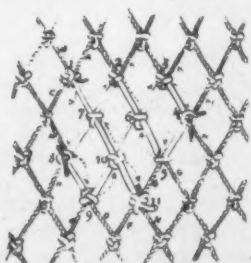
SIDER ON THE LEFT



PICK-UP KNOT - L TO R



HALF-MESH KNOT - L TO R



FINISHING KNOT

STARTER KNOT

(Sketch A) Shuttle the needle with sufficient length of twine, between A and B legs from underneath (1); and with the left hand forefinger checking the twine at junction (2) allow the twine to slip by until only about one inch of the end (E) extends from the knot (D).

(Sketch B) Grip tightly at junction (3) with the left thumb. With sufficient slack of the mending twine form a loop to the left (4) and shuttle the needle (5) to the left under the A and B legs and over the twine loop (6) and follow through.

(Sketch C) Swing the needle to the right and downward tightening the hitch (7).

(Sketch D) Make another loop to the left (8) and shuttle the needle under one leg (B) and follow through to the left (9).

(Sketch E) Pull the twine downward to the right and tighten the hitch (10).



FIG. 24 - STARTER KNOT (1) COMPLETED



FIG. 23 - STARTER KNOT

HALF-MESH KNOT

(LEFT TO RIGHT WEAVING)



A

(Sketch A) Holding the needle twine somewhat stretched, get hold of the twine with the left hand so that the little finger will be in the mesh (1) next to the one in the making; the twine is held between the forefinger and thumb (2), then shuttle the needle through the mesh loop (3) from underneath.



B

(Sketch B) Follow through (4) and then downward.



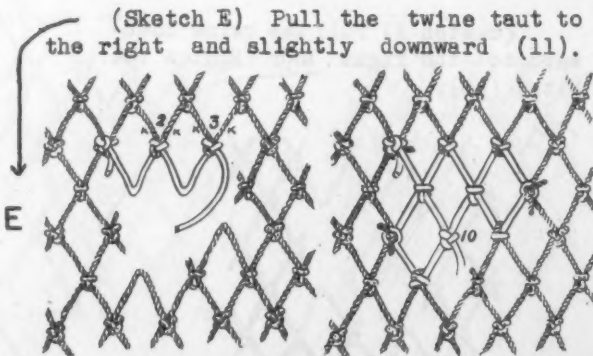
C

(Sketch C) Pull the twine (5), at the same time checking with the forefinger (6) until the loop in the making is of the same size as the one of the little finger.



D

(Sketch D) Grip tightly with the thumb at the junction (7) and with sufficient slack twine form a loop (8) and shuttle the needle from right to left under the two legs, and over the mending twine loop (9) following through (10) swinging the needle to the right.



E

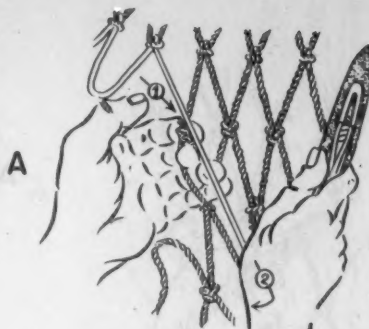
(Sketch E) Pull the twine taut to the right and slightly downward (11).

FIG. 25 - HALF-MESH KNOT
L TO R WEAVING

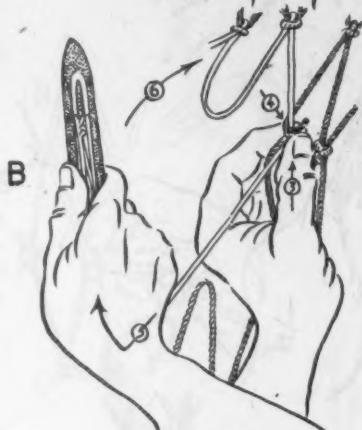
FIG. 26 - HALF MESHES COMPLETED. (2), (3), AND (10) ARE ALL OF THE LEFT TO RIGHT TYPE.

SIDER ON THE RIGHT

(Sketch A) Grip the lower leg of the sider, so that the forefinger is under the knot (1). Swing the mending twine to the right holding it quite taut in a position close to the right side of the knot (2).



(Sketch B) With the thumb, roll (3) the sider knot over the mending twine and hold tightly (4), then begin to swing the needle with sufficient twine slack (5 and 6).



(Sketch C) Continue swinging the needle to form a loop to the left of the knot (7) and shuttle the needle (8) under the upper leg of the sider knot and mending twine, and over the twine loop; follow through.



(Sketch D) Pull the twine to the left and somewhat downward to tighten the hitch (9).

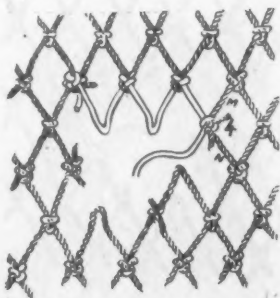
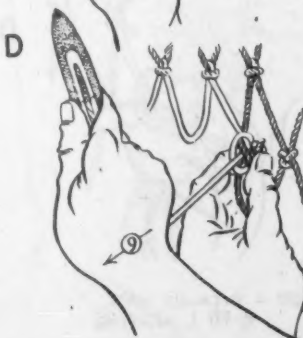


FIG. 28 - SIDER KNOT (4) COMPLETED

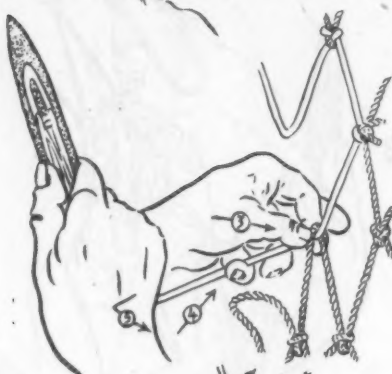
FIG. 27 - SIDER ON THE RIGHT

PICK-UP KNOT

(RIGHT TO LEFT WEAVING)



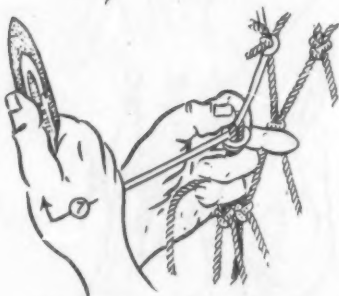
- A (Sketch A) Shuttle the needle through the pick-up mesh (1) following through and upward (2).



- B (Sketch B) With the left hand, grasp at the junction (3), pull the twine until all sides of the mesh are equal, then tighten the grip and pick up the mending twine with the little finger (4). Swing the needle downward (5) to the right, and with sufficient slack twine form a loop.



- C (Sketch C) Still supporting the twine with the little finger shuttle the needle under the pick-up mesh legs following through and over the twine loop (6) while holding the twine clear of the needle with the little finger.



- D (Sketch D) Pull the twine to the left and upward (7) to tighten the hitch.

FIG. 29 - PICK-UP KNOT
R TO L WEAVING

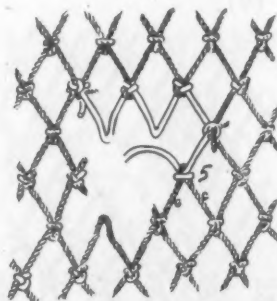


FIG. 30 - PICK-UP KNOT (5) COMPLETED

HALF-MESH KNOT

(RIGHT TO LEFT WEAVING)

(Sketch A) Place the left hand little finger into the mesh next to the one in the making (1), and throw the twine under the third finger for the size check. Hold the needle to the left and move upward (2).

(Sketch B) Shuttle the needle from above (3) and follow through.

(Sketch C) Pull the needle and mending twine slightly downward (4) checking the twine at the junction (5) with the forefinger until the bight being made is the same size as the half mesh (6) held by the little finger.

(Sketch D) Clamp tightly with the thumb (7), then with sufficient slack twine form a loop to the right (8) and shuttle the needle (9) under the two legs of the mesh and over the twine loop, then follow through.

(Sketch E) Tighten the hitch to the left and downward (10).

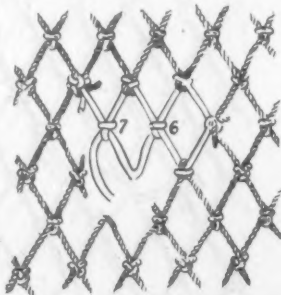


FIG. 32 - HALF-MESH KNOT (6 AND 7) COMPLETED

A

B

C

D

E



FIG. 31 - HALF-MESH KNOT
R TO L WEAVING

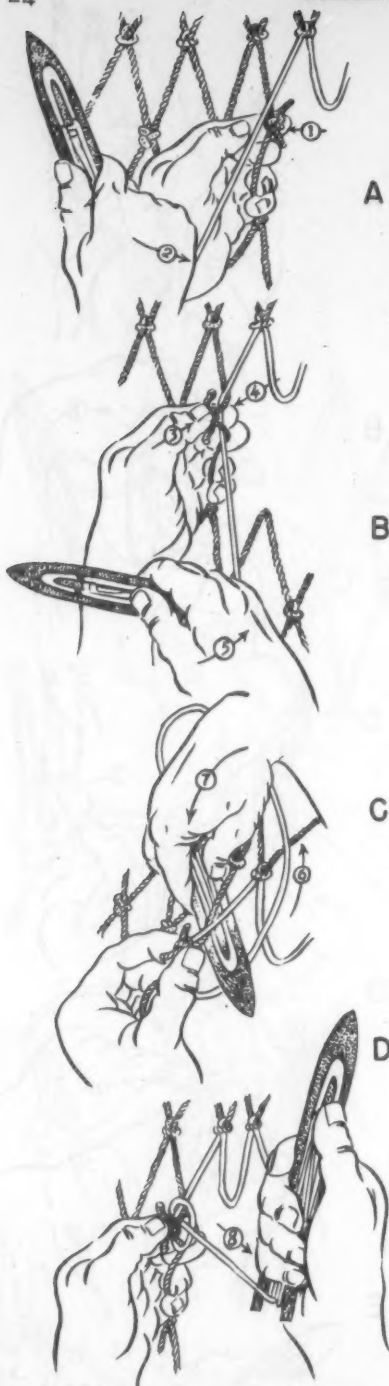


FIG. 33 - SIDER ON THE LEFT

SIDER ON THE LEFT

(Sketch A) With the left hand get hold of the sider lower leg, and with the forefinger under the knot (1), swing the needle and twine to the right (2), with the mending twine somewhat taut place it on top of and to the left of the sider knot.

(Sketch B) With the thumb, roll the sider knot to the left over the mending twine (3) and hold tightly (4). Swing the needle to the right and upward (5).

(Sketch C) With sufficient slack in the mending twine form a loop to the right (6) and from above shuttle the needle (7) under the upper leg of the sider knot and mending twine, and over the twine loop, then follow through.

(Sketch D) Pull the needle and twine to the right and downward to tighten the hitch.

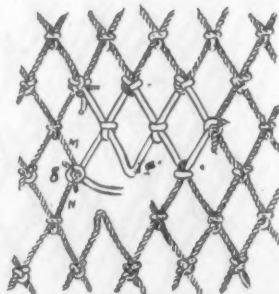


FIG. 34 - SIDER ON THE LEFT (8) COMPLETED

PICK-UP KNOT

(LEFT TO RIGHT WEAVING)

(Sketch A) Hold the top of the pick-up mesh with the left hand (1) shuttling the needle (2) from underneath and follow through.

(Sketch B) Pull the twine to the left and slightly upward until all sides of the mesh are of equal length and hold tight at junction, (4), then swing the needle downward to the right.

(Sketch C) Hook the mending twine on the little finger of the left hand and with sufficient slack twine form a loop, then shuttle the needle (7) under both pick-up mesh legs, and over the twine loop. The little finger keeps the loop clear for the needle to pass over.

(Sketch D) Drop the twine off the little finger and pull the needle upward to the right, tightening the hitch (8).

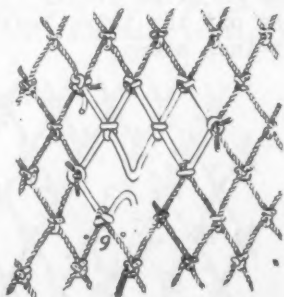


FIG. 36 - PICK-UP KNOT (9) COMPLETED

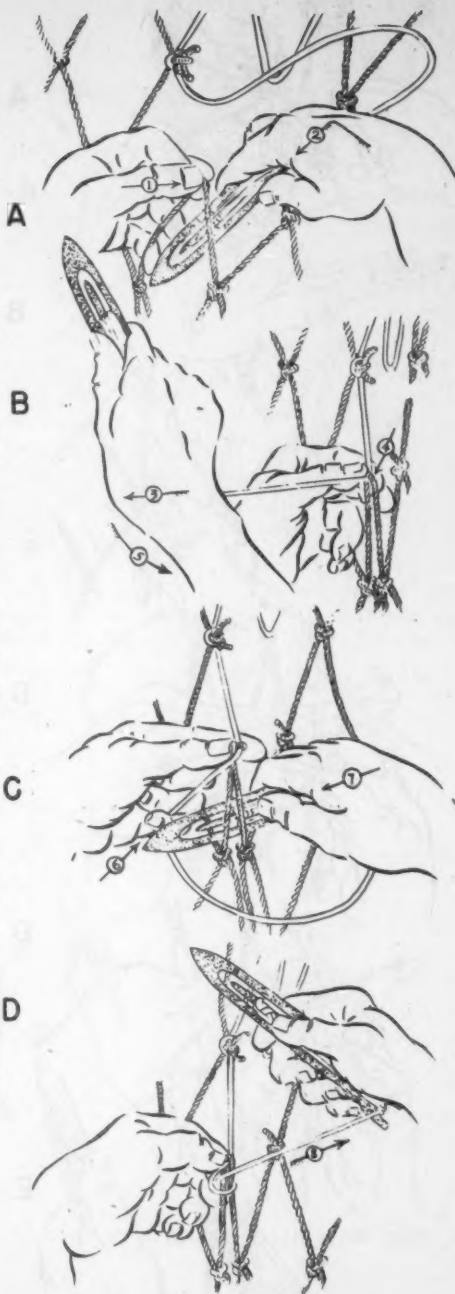
FIG. 35 - PICK-UP KNOT
L TO R WEAVING



FIG. 37 - FINISHING KNOT

FINISHING KNOT

(Sketch A) Hold the leg (F) of the finishing three-legger as shown (1). Shuttle the needle from above, between legs F and H and follow through.

(Sketch B) Pull the twine (2) upwards until leg K (in the making) becomes equal in length to the legs L and G. Then hold fast with the left thumb at junction (3).

(Sketch C) Form a loop with sufficient slack of the mending twine (4). Shuttle the needle under legs G and K and over the mending twine loop (5), and follow through (6). Do not tighten the hitch.

(Sketch D) Repeat for the second time, shuttling under (7) legs G and K, making another hitch (8). Be sure that the second hitch is below the first one, otherwise it will not tighten smoothly, the overlapping hitch will jam.

(Sketch E) Pull the twine to the right slightly downward to tighten the hitch evenly (9). When cutting off the twine leave about a half-inch stump.

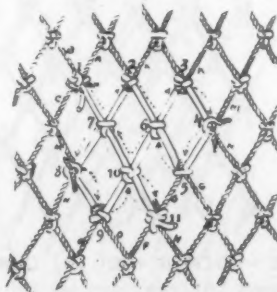
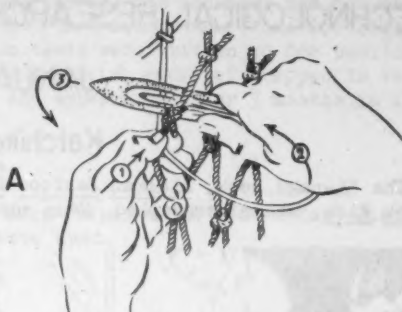


FIG. 38 - FINISHING KNOT (11) COMPLETED AND THE TEAR MENDED.

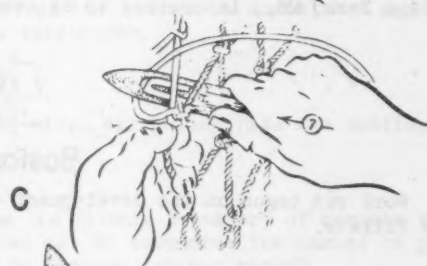
DOUBLE HITCH SIDER KNOT

Often in a damaged net that has been under extreme strain the sider knots have become loose or defective in some other way. Then the double hitch knot is used for additional security.

(Sketch A) Bring the mending twine into position to the left of the knot as shown in the sketch, hold firm with the left thumb (1), shuttle the needle from underneath between the upper leg of the mesh and the twine (2), and follow through, then swing the needle to the left and slightly downward (3).



(Sketch B) Pull the twine (4) until a half hitch is formed under the knot, then hold fast (5) by pressing the mending twine with the thumb against the knot, then with sufficient slack in the mending twine form a loop to the left of the knot (6).



(Sketch C) Shuttle the needle (7) under the sider leg and twine then over the mending twine loop and follow through.



(Sketch D) Pull to the left (8) and slightly downward to tighten the hitch.

FIG. 39 - DOUBLE HITCH SIDER KNOT



TECHNOLOGICAL RESEARCH IN SERVICE LABORATORIES

JANUARY 1947

Ketchikan, Alaska

The 64-page book, Alaskan Seafood Recipes, was completed; and a booklet, How to Cook Fish, was mimeographed. Many copies of these publications were distributed



at the Alaskan Arts and Crafts Exhibit in Juneau. Requests for copies were received from all over the Territory. A display of marine products useful in arts and crafts was shown at the exhibit.

* * *

Over two hundred cans of various products prepared from Alaska salmon cannery trimmings were opened and tested. Assays are being made of vitamins A, B₁, and B₂, of the contents.

* * *

Clam samples were obtained from Ham and Carlton Islands and shipped to the College Park, Md., laboratory to be tested for toxicity.



Boston, Mass.

Work was begun on the development of new methods of curing and smoking pollock fillets.

* * *

A lecture on fishery technology was presented at the Quartermaster Food and Container Institute in Chicago during the week of January 20, and discussions were held with its Technical Director relative to additional cooperative research.

* * *

In further experiments on electrostatic smoking at Eastport, Maine, it was found that the dehumidifier improved the smoke by removing acrid components at the same time that the water was removed.



College Park, Md.

After 10 months in frozen storage, the oysters in most of the wrappers had lost but negligible amounts of moisture. In two wrappers, however, oysters showed

considerable freezer burn. Average pH values for all the packages had not changed appreciably during the past 4 months and had decreased less than 0.1 since the first month of storage. The results of these tests were written up for publication in a trade journal. Fillets of sea trout and Spanish mackerel wrapped in various films were not noticeably changed in flavor and appearance after 3 months in frozen storage.

* * *

Twenty-five recipes and various sauces were prepared and tested for palatability. Nine species of fish and shellfish were used.

* * *

At the request of various interested organizations, the following canned products were examined: sardine fillets, carp, lake herring, California mackerel, and smoked salmon.

* * *

A staff technologist served as consultant to the fish-canning section at the National Cannery Association Convention in Atlantic City, assisting at a cutting of imported canned fishery products and conferring with fish and shellfish canners on industry problems.

* * *

Several materials which might be used as insulation in containers for the shipment of fish by air were tested in the laboratory.

* * *

Test feeding of kelp products to rats, mice, and guinea pigs was continued.

* * *

Chick assays were started to determine the vitamin D content of certain seal oil products. Biological tests were carried out to determine the amount of protein needed from various fishery products to produce optimum growth.

* * *

Further toxicity determinations with mice were run on 54 extracts from Alaska clams, and the rat-growth bioassay for thiamine in canned tuna fish was nearly completed.

* * *

Over 270 samples of clams, water, and mud from the Parker River Refuge and adjacent areas in Massachusetts were bacteriologically examined in the trailer laboratory.

* * *

A series of fish-cookery classes was conducted at the Quartermaster Subsistence School in Chicago from January 21 through 24.

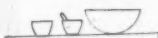
* * *

Further experiments were carried out on the inhibition of lactose fermentation of coliform bacteria by filtrates of Pseudomonas cultures.



Mayaguez, P. R.

As a result of efforts of the laboratory staff, a much-needed new firm, with modern refrigeration facilities, was established in Mayaguez for the sale of fresh fishery products. The laboratory staff supplied considerable information on the handling, storage, and preparation of fishery products and on trade practices and seasonal variations in sales.



Seattle, Wash.

Through cooperation with a commercial firm, a fairly large sample of Alaska king crab meat was obtained, and extensive tests were begun on the refrigerated storage of this product in cellophane, pliofilm, foil, and tin cans. Tanner crab meat is being similarly tested in cellophane and in tin cans.

* * *

Inspections of samples of various other fishery products previously placed in refrigerated storage yielded the following data: Steelhead steaks stored 6 weeks with and without N.D.G.A. showed no signs of rancidity; silver salmon held 4 months at -5° F. held up about as well in aluminum foil as in cellophane, but not as well as in evacuated tin cans; whole grayfish livers stored 3 months at 32° F. had not lost any appreciable amount of their vitamin A potency.

* * *

Recipes for the following dishes were tested: broiled kippered salmon with egg sauce, kedgerie, salmon bechamel, king crab legs broiled on toast, clam chowder, and fish chowder. Taste tests were conducted on six samples of canned Maine sardines, cooked dishes prepared from frozen Pacific rockfish or frozen oysters, rockfish cocktail, hard-smoked salmon, and a commercial pack of frozen creamed salmon.

* * *

Two lecture classes and a laboratory class on prevention of fish spoilage were held at the University of Washington School of Fisheries on January 20.

* * *

The addition of 0.1 percent N.D.G.A. to halibut liver oil lessened slightly the destruction of the vitamin A content by oxidation. The simultaneous addition of 0.1 percent citric acid produced a synergistic protective effect. Higher concentrations of N.D.G.A., up to 0.5 percent, were tested and found to give increased

protection; but concentrations of 0.3 percent or more darkened the oil during the oxidative treatment.

* * *

Assays of samples of fur-seal carcass oil, produced in the Government reduction plant in the Pribilof Islands, showed a vitamin A content of not more than 600 units per gram. Plans were submitted for the improvement of this product in future seasons.

* * *

The State of Idaho was assisted in the planning of a portable plant for the reduction of rough fishes removed from Idaho waters.

* * *

The factory ship Pacific Explorer reached Costa Rica about January 15. A staff technologist was on board as an observer.

* * *

A Florida firm developing a composite fertilizer containing fish offal submitted test samples for inspection. Suggestions were made for improvement of the product.



OILS AND FATS

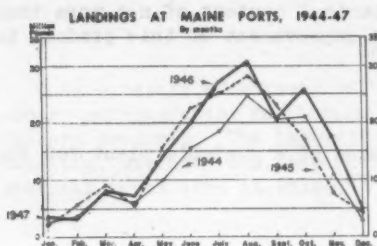
The nutritive value of fish oils depends on composition, energy value, digestibility and vitamin content. The composition of fish fats is about the same as that of animal or vegetable fats except that fish fats are liquid at ordinary temperatures. Also, the fats of fresh fish oxidize and become rancid more readily than animal or vegetable fats. However, the fat of canned fishery products is even less liable to rancidity than fresh meat fats, because air is excluded from the can.

Fat is important in the diet to supply energy and a certain minimum is needed for the proper functioning of the body. The energy value of fish fats has been estimated as equal to most animal and vegetable fats and about one-fourth greater than that of butter or margarine. From such evidence as is available, the digestibility of fishery products fats as a class appears to be equal to that of other fats.

--Fishery Leaflet 90

FRESH AND FROZEN FISH

New England



MAINE LANDINGS DURING JANUARY: Maine fishermen landed 3,006,000 pounds of fishery products, valued at \$537,200, during January. Rosefish, lobsters, and soft clams accounted for 63 percent of the total landings and 72 percent of their value, according to Current Fishery Statistics No. 329.

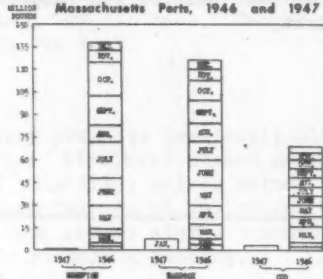
This represented a poundage decline of 40 percent compared with the landings in December 1946, and was 16 percent less than the volume landed in January 1946.

* * * * *

MASSACHUSETTS LANDINGS DURING JANUARY: Landings by fishing craft at the ports of Boston, Gloucester, New Bedford, Provincetown and other Cape Cod ports during January amounted to 17,829,000 pounds, valued at \$1,783,800. This was an increase of 31 percent in total landings and 68 percent in their value compared with the corresponding month in 1946, according to Current Fishery Statistics No. 330.

Boston Fish Pier landings for January totaled 12,378,000 pounds, a decrease of 10 percent compared with last month, but an increase of 261 percent compared with January 1946, according to the Service's Market News Office at Boston. Last year, the offshore boats at Boston were tied up during January because of a labor dispute, which accounted for the extremely light landings at that time.

Landings of Rosefish, Haddock, and Cod at Massachusetts Ports, 1946 and 1947



Gloucester and New Bedford landings for January totaled 1,316,000 pounds and 3,294,000 pounds, respectively. Compared with December 1946, Gloucester showed a decline of 85 percent and New Bedford, 32 percent. In comparison with last year, landings for Gloucester decreased 73 percent, while those for New Bedford increased 10 percent. The large decline in Gloucester landings was due to the fact that no catches of rosefish were reported during January.

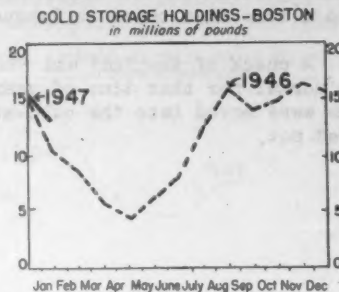
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BOSTON COLD-STORAGE HOLDINGS: Holdings of fish and shellfish in 20 New England cold-storage warehouses totaled 25,616,000 pounds on February 1, according to the Service's Boston Market News Office. These stocks showed a decrease of 5,577,000 pounds compared with holdings on January 1, but were 6,692,000 pounds greater than those on February 1, 1946.

Boston warehouses held stocks amounting to 13,174,000 pounds on January 29. This was a decrease of 2,967,000 pounds compared with the previous month, but was 2,748,000 pounds greater than holdings on February 1, 1946. Gloucester plants

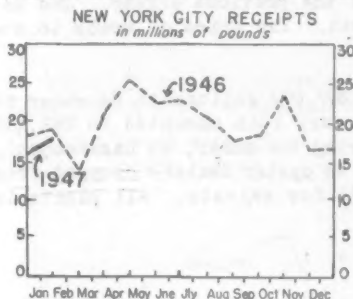
held 9,448,000 pounds on January 29, a decrease of 1,323,000 pounds compared with January 1, but 5,821,000 pounds greater than stocks on February 1, 1946. New England plants, other than those at Gloucester and Boston, held a total of 2,944,000 pounds as of February 1, a decrease of 1,287,000 pounds compared with the previous month and 1,877,000 pounds less than the inventory on February 1, 1946.

Items held in the New England plants in quantities over a million pounds were rosefish fillets, pollock fillets, haddock fillets, cod fillets, and whiting.



Middle Atlantic

NEW YORK CITY ARRIVALS: Landings and receipts of fresh and frozen fishery products in New York City's wholesale salt-water market during January totaled 17,020,000 pounds. This represented a decrease of 4 percent compared with December receipts, and a decline of 9 percent compared with January 1946, according to the Service's local Market News Office.



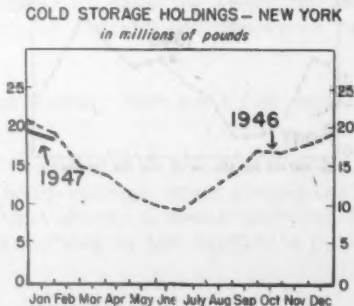
Consumer demand throughout the month was only moderate, and despite the decline in fish production, on several days quantities of fish were carried over.

Species that appeared in abundance were yellowtail, cod, fluke, haddock, smelt (mostly frozen), porgies, flounder, and lemon sole. In addition, Spanish mackerel and mullet from the South were in good supply, but moved very slowly. The most important shellfish items were mussels, hard clams, oysters, scallops, and shrimp.

* * * * *

NEW YORK CITY COLD-STORAGE HOLDINGS: Holdings of fish and shellfish in the New York metropolitan area totaled 18,481,000 pounds on February 1, 1947. This figure represented a decrease of 4 percent compared with stocks on January 1, but was an increase of 3 percent compared with February 1, 1946 holdings, according to the Service's local Market News Office.

Salt-water items held in greatest quantity were cod fillets (including some imported fillets), salmon, and halibut. Mackerel holdings were very light compared with those on February 1, 1946. Cisco, sturgeon and spoonbill cats, and whitefish were foremost in the fresh-water holdings. Lobster tails, scallops, and shrimp were the out-



standing items in the shellfish stocks. Shrimp holdings were nearly a million pounds less than those on February 1, 1946.

A check of the "in" and "out" cold-storage figures indicated that the activity was normal for that time of year. During January, more than 3 million pounds of fish were moved into the cold-storage warehouses and over $3\frac{1}{2}$ million pounds were moved out.



Chesapeake

PRODUCTION: Landings of fish and shellfish in the Hampton Roads area of Virginia during the month of January amounted to 2,765,000 pounds compared with 1,438,000 pounds in December, an increase of approximately 92 percent. Compared with production during January 1946, this was a decline of 1,027,000 pounds, according to the Service's local Market News Office.

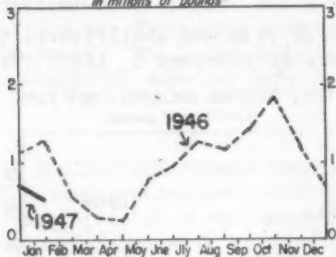
Production of fresh picked crab meat in the Virginia-Maryland areas amounted to 105,000 pounds, a decrease of 29,000 pounds compared with that during December. Production in January 1946 totaled 144,000 pounds. The winter's crab dredging to January 31 was very poor in comparison with that of the previous winter. The demand for crab meat held up well throughout the month. The price of crabs to the fishermen rose from \$10 to \$12 per barrel.

Production of shucked oysters increased from 287,072 gallons in December to 289,110 gallons in January. Production during January 1946 amounted to 288,488 gallons. The demand for shucked oysters declined during the month, as unseasonably warm weather prevailed most of the time. The price to oyster dealers dropped from \$4 to \$3.50 for standards, and from \$4.50 to \$4.25 for selects. All plants in this area worked nearly full time.



South Atlantic

SOUTH ATLANTIC SHRIMP RECEIPTS
in millions of pounds



PRODUCTION: Shrimp production in Florida and other South Atlantic States during January amounted to 587,000 pounds (heads off). This was 20 percent less than the December landings and 59 percent less than those during January 1946, according to the Service's Market News Office at Jacksonville, Florida and Georgia landings were 63 and 43 percent less, respectively, than for the corresponding month last year.

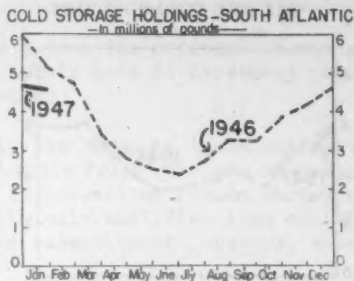
Continued warm weather, heavy fogs, and high winds during the month were chiefly responsible for the decrease in shrimp production in this area.

* * * * *

COLD-STORAGE HOLDINGS: Fish and shellfish holdings on February 1 in five major cold-storage warehouses in the South Atlantic States totaled 4,311,000 pounds. Compared with holdings on January 1, this represented a decrease of 263,000 pounds, or 6 percent, and was 853,000 pounds less than stocks held on February 1, 1946, according to the Service's Market News Office at Jacksonville. Total withdrawals exceeded total receipts by 269,000 pounds.

Items in storage of over 100,000 pounds were, in order of quantity, mullet, fillets of cod, haddock, pollock, and rosefish; shrimp, whiting and king whiting, Spanish mackerel, catfish and bullheads, and scup.

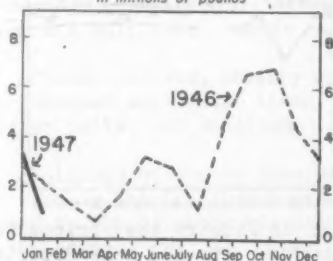
Holdings of fish declined 191,000 pounds and stocks of shellfish, 72,000 pounds during January. Withdrawals of mullet, croaker, fillets, sea trout, whiting and king whiting, spiny lobster, and scallops accounted for the major reduction. Shrimp holdings on February 1 were approximately one-half of stocks on February 1, 1946.



Gulf

PRODUCTION: Shrimp landings in the Gulf area during January totaled 1,078,000 pounds (heads off), a decline of 2,150,000 pounds compared with the December production and 1,122,000 pounds less than January 1946, according to the Service's Market News Office at New Orleans.

GULF SHRIMP RECEIPTS—
—in millions of pounds—



Texas shrimp production during January was greater than that during the corresponding month last year; Mississippi and Alabama landings were only a small percentage of the January 1946 production; and Louisiana's total was 65 percent of the quantity landed during January 1946.

The oyster-canning season got under way in January, which was earlier than last year, and many fishing craft were consigned exclusively to oyster production. Over 30 times more oysters were canned during the month than in January 1946.

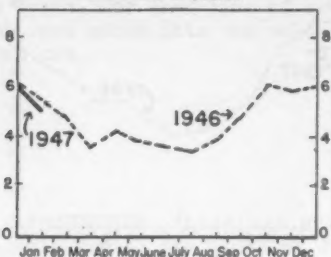
Shrimping operations were curtailed, for a number of days, by heavy fog over the coastal area, which also hindered the movements of freight and passenger vessels.

Less than 10 percent of shrimp landings during January were used for canning.

COLD-STORAGE: Shrimp holdings in 11 Gulf cold-storage plants amounted to 2,779,000 pounds on January 30, 23 percent less than stocks 4 weeks previous and 5 percent less than holdings on January 31, 1946, according to the Service's Market News Office at New Orleans.

Holdings of frozen cooked and peeled shrimp amounted to 111,000 pounds on January 30. This represented a decrease of 13 percent compared with stocks 4 weeks previous. Cooked and peeled shrimp holdings totaled only 3,000 pounds on January 31, 1946.

GULF COLD STORAGE HOLDINGS
in millions of pounds



Frozen salt-waterfish holdings amounted to 1,766,000 pounds on January 30, 15 percent less than stocks on January 2 and 23 percent below holdings on January 31, 1946. Mullet, Spanish mackerel, red snapper, rosefish fillets, cod fillets, flounder (including sole), whiting and king whiting, red drum (redfish), and sea trout accounted for 1,022,000 pounds of the total held.

The "out" movement during January exceeded the "in" movement by 86,000 pounds.



Great Lakes

CHICAGO RECEIPTS: Receipts of fresh and frozen fishery products in the Chicago wholesale fish market during January amounted to 6,549,000 pounds. This total represented a decline of 3 percent compared with December's receipts, but was 5 percent greater than those for January 1946, according to the Service's local Market News Office.

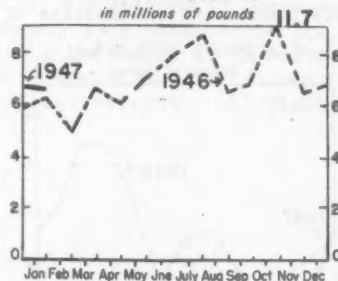
Fresh-water receipts rose 10 percent during January because of increased deliveries of whitefish, chiefly from Alberta, together with substantial deliveries of sauger, yellow perch, and yellow pike from Manitoba. Steady deliveries of "rough fish" (carp, sheepshead, etc.) from Iowa, Illinois, and Wisconsin also contributed to the rise. Lake Superior whitefish receipts were light throughout January. Deliveries of Alberta whitefish arrived in such quantities during the first half of January that prices for this species declined 50 percent within 5 days. This decline affected Lake Superior whitefish prices also. When whitefish were in greatest abundance in the markets, some dealers were willing to accept any reasonable price in order to move their stocks.

Although receipts of fresh lake trout were insufficient to meet consumer demands, the price remained stable during the month.

Salt-water receipts showing the greatest decline were those of halibut and salmon from the Pacific coast and Alaska. Halibut receipts declined 40 percent compared with those in December and were 59 percent below receipts during January 1946. Salmon receipts decreased 31 percent compared with those in December and were 44 percent below arrivals during January 1946.

Halibut and salmon are recognized as specialty items. The margin of profit to the retail dealer from the sale of these species is relatively small compared

CHICAGO RECEIPTS
in millions of pounds



with the amount of money he invests; therefore, the dealers have preferred to invest their money in faster moving, lower priced items that would give them greater returns on their investments.

Receipts of fillets, except frozen cod fillets from the Maritime Provinces, were insufficient to satisfy the existing market. This made it necessary to resort to cold-storage withdrawals to supply the demand.

Shrimp arrivals in January were practically the same as those during the previous month, although frozen receipts increased while fresh receipts decreased. Imports of frozen shrimp from Mexico amounted to 45 percent of frozen shrimp arrivals at Chicago during the month. Shrimp was the only shellfish item arriving in any quantity. Nearly all other items, with the exception of lobsters, showed sharp declines.

* * * * *

CHICAGO COLD-STORAGE: Total holdings of fishery products in Chicago cold-storage warehouses on January 30 amounted to 7,012,000 pounds. This represented a decline of 8 percent compared with stocks held on January 2 and was 7 percent less than holdings on January 31, 1946.

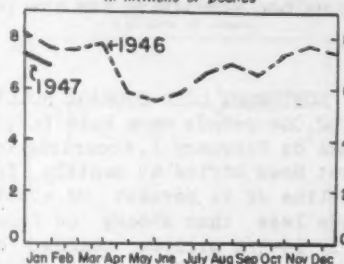
Withdrawals of salt-water varieties accounted for the greater part of the decline in total holdings. Slight decreases were also noted in fresh-water fish and shellfish.

The most important fresh-water items held, in order of quantity, were whitefish, chubs, catfish and bullheads, smelt, and yellow perch.

Frozen fillets, chiefly cod and rosefish; halibut, salmon, and flounders were the foremost salt-water items. Leading shellfish stocks consisted of shrimp, spiny lobster tails, and scallops.

Holdings of shrimp have shown a steady decline since the Christmas holidays, but this is the usual seasonal trend due to curtailed production in the Gulf area caused by the offshore migration of shrimp and stormy weather. However, in spite of the natural decline in holdings during January, indications are that shrimp have become a very important item of consumption, as is apparent in the comparison of January arrivals with those of the corresponding month in 1946: Although receipts have considerably increased over a year ago, holdings have continued to decline.

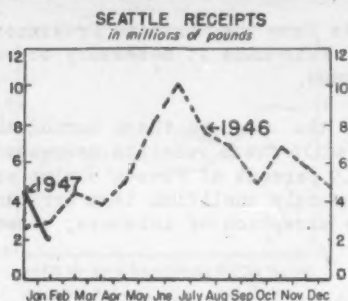
COLD STORAGE HOLDINGS—CHICAGO
in millions of pounds



Pacific

SEATTLE ARRIVALS: Landings and receipts of fresh and frozen fishery products at Seattle during January totaled 2,115,000 pounds, according to the Service's local Market News Office. This represented a decline of nearly 50 percent compared with December and was 28 percent below the January 1946 figure.

Continued bad fishing weather offshore severely hampered otter-trawl operations, with the result that, although vessels made 26 trips to the fishing banks, only about 136,000 pounds, mostly true cod, rockfishes, and English sole, were



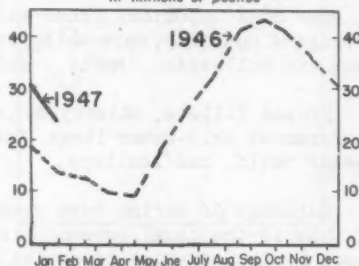
landed. Nearly all vessels operated in the comparatively shoal waters inside the Straits of Juan de Fuca and off Cape Flattery, with only two trips being made to the Hecate Straits. Prices to the fishermen for a number of trawl-caught species declined during the month to 1-3/4 cents a pound. True cod and soles were mainly affected. Subsequent surveys of the retail markets, however, failed to indicate a similar trend in prices.

The major portion of the month's receipts were frozen products from Alaska, which totaled over 1-1/3 million pounds and consisted largely of frozen salmon, halibut, and sablefish. Receipts from local sources, delivered by fishing craft and trucks, amounted to 671,000 pounds, and consisted mostly of bottomfish, shellfish, and livers. British Columbia imports totaled nearly 64,000 pounds, fillets and frozen king salmon accounting for the largest portion.

* * * * *

NORTHWEST COLD-STORAGE HOLDINGS: Stocks of fish and shellfish amounting to 23,362,000 pounds were held in 30 cold-storage plants in Washington, Oregon, and Alaska on February 1, according to the Service's Market News Office at Seattle. This represented a decline of 21 percent, or about 6-2/3 million pounds less than stocks on January 1, but was nearly 10-3/4 million pounds, or 80 percent, greater than the February 1, 1946 figure.

COLD STORAGE HOLDINGS—NORTH PACIFIC
in millions of pounds



Oregon and Washington holdings dropped between three-quarters of a million and a million pounds. Items held in greatest quantity were halibut, salmon, sablefish, and bait and animal food. Cured stocks declined about 4 percent and amounted to approximately 3 million pounds on February 1. Nearly five-sixths was mild cured salmon, most of which was held in Seattle warehouses.

Freezings in Washington, Oregon, and Alaska amounted to 430,000 pounds during January, a decrease of 26 percent compared with freezings in December and 21 percent below those in January 1946. Washington plants froze nearly four-fifths of the total.

Sluggish action in many markets throughout January was not conducive to substantial withdrawals of frozen products; consequently, cold-storage plants were unable to reduce their holdings to any appreciable extent. However, Alaska plants reduced their inventories about 5½ million pounds with fairly large shipments of frozen halibut and salmon to Seattle for distribution.

* * * * *

LANDINGS AT SOUTHERN CALIFORNIA PORTS: Landings of fresh fish at the ports of San Pedro, Santa Monica, and San Diego during January declined sharply, to only

790,000 pounds, a decrease of 1,829,000 pounds compared with production for December, according to the Service's Market News Office at San Pedro.

The greatest decline, compared with December, occurred in the San Pedro-Santa Monica area. Landings at San Diego and Newport Beach also declined. At San Pedro, the largest decrease was noted in receipts of mackerel, with only 497,000 pounds landed in January compared with 1,708,000 pounds in December. At San Diego, declines in the landings of black sea bass and bonito accounted for the difference between 192,000 pounds in January and 357,000 pounds in December. At Newport, the decrease in mackerel landings accounted for the decline of 51,700 pounds compared with December.

The reason for the general decline in landings during the month was a normal post-holiday trend, in the opinion of the dealers, who felt that production would be resumed about the middle of January.

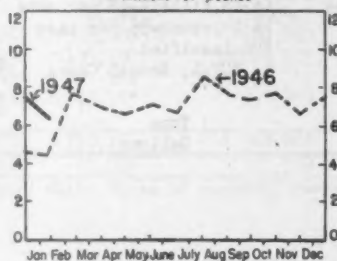
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CALIFORNIA COLD-STORAGE HOLDINGS: Stocks of fish and shellfish in California cold-storage plants on February 1 totaled 6,255,000 pounds, which was a decrease of 1,248,000 pounds compared with holdings on January 1 and a decline of 1,373,000 pounds compared with the February 1, 1946 figure, according to the Service's Market News Office at San Pedro.

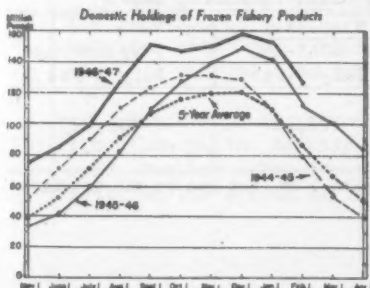
Freezings of fish totaled 191,000 pounds during January, which was a decrease of approximately 149,000 pounds compared with December and was 39,000 pounds less than the January 1946 freezings.

Sizable decreases were noted in the holdings of unclassified fillets, California halibut, northern halibut, sablefish, salmon, bait and animal food, shrimp, and squid. The greatest decline in freezings, by species, was in unclassified fillets, mackerel, and unclassified salt-water fish.

COLD STORAGE HOLDINGS—CALIFORNIA
in millions of pounds



United States



COLD-STORAGE FREEZINGS AND HOLDINGS: Domestic stocks of frozen fish and shellfish, held by cold-storage operators reporting their activities to the Fish and Wildlife Service, amounted to 127,381,000 pounds on February 1, a decline of 17 percent (25,422,000 pounds) below the holdings on the first of the previous month. February 1 stocks were 12 million pounds above those on the corresponding date in 1946, and 40 million pounds greater than the 5-year average, according to Current Fishery Statistics No. 322.

CANNED AND CURED FISH

Pilchard

PILCHARD PACK: Pilchard (California sardine) landings totaled 8,847 tons during January 1947, according to reports of the California Sardine Products Institute and the California Division of Fish and Game. This contributed to a canned pack of 120,616 actual cases from January 3-30, 1947. The canned production for the 1946-47 season to January 30 fell 1,052,903 cases below the 1945-46 pack to February 2. The canned production from December 31, 1945, to January 26, 1946, was 402,373 cases.

California Sardine Landings, Canned Pack and Byproducts					
Item	Unit	M O N T H		S E A S O N	
		1 9 4 7	1 9 4 6	1946-47	1945-46
		January	January	Aug.-Jan.	Aug.-Dec.
Landings	Tons	8,847	34,588	215,536	386,510
		Jan. 3-30	Dec. 31, 1945-Jan. 26, 1946	Aug. 1-Jan. 30	Aug. 1-Feb. 2
Canned	1 lb. ovals-48 per case	29,526	106,846	586,550	1,128,076
	1 lb. tails-48 per case	85,397	291,979	1,906,394	2,379,679
	1 lb. fillets-48 per case	232	-	8,724	-
	1 lb. round-96 per case	-	2,043	34,253	47,256
	Unclassified	5,461	1,505	59,674	93,487
TOTAL, Actual Cases		120,616	402,373	2,595,595	3,648,498
Meal	Tons	January	January	Aug.-Jan.	Aug.-Jan.
Oil	Gallons	1,313	4,593	29,347	55,391
		91,466	367,091	4,097,416	11,172,411



Shrimp

SHRIMP PACK: During January 1947, 2,126 standard cases of shrimp were packed, according to reports received from canning plants operating under the Seafood Inspection Service of the Food and Drug Administration. From July 1, 1946 to February 1, 1947, 235,542 standard cases of shrimp were packed, this was 113,415 standard cases more than were produced during the corresponding season, to February 2, in 1946.

Wet and Dry Pack Shrimp in all Sizes in Tin and Glass--Standard Cases*				
M O N T H		S E A S O N		3-yr. average July 1-Feb. 2
1 9 4 6	1 9 4 5	1946-47	1945-46	
Dec. 29-Feb. 1	Dec. 23-Feb. 2	July 1-Feb. 1	July 1-Feb. 2	
2,126	6,020	235,542	122,127	908,223

*All figures on basis of new standard case--48 No. 1 cans with 7 oz. per can in the wet pack and 6½ oz. per can in the dry pack



Tuna and Mackerel

TUNA AND MACKEREL PACK: The production of canned tuna by California packers during January totaled 139,090 standard cases, according to the California Division of Fish and Game. This was 68 percent less than the pack for December and 18 percent under that for January 1946. The greatest decline in any one item occurred in bluefin tuna. None was canned in January 1947, while 8,929 cases were packed in the corresponding month last year. Yellowfin tuna, as usual, made up the bulk of the pack, accounting for 72 percent of the January production.

The pack of mackerel during January was 77,626 standard cases, a decrease of 73 percent under December 1946, but an increase of 121 percent over January 1946.

California Pack of Tuna and Mackerel--Standard Cases*

Item	January 1947	December 1946	January 1946	Twelve months ending with December 1946
	Cases	Cases	Cases	Cases
Tuna:				
Albacore	2	20	-	385,682
Bonito	6,197	17,544	1,325	110,862
Bluefin	-	-	8,929	313,547
Striped	11,532	35,487	8,880	630,882
Yellowfin	100,504	303,558	129,750	2,183,323
Yellowtail	1,848	1,680	514	44,734
Flakes	19,087	78,502	20,759	899,952
Tonno style	-	-	-	-
Total	139,090	436,791	170,157	4,568,982
Mackerel	77,626	286,525	35,049	710,228

*Standard cases of tuna represent cases of 48 7-ounce cans, while those of mackerel represent cases of 48 1-pound cans.



FROZEN MEAT

The future of the frozen meat industry will depend, largely, on the reaction of consumers to buying frozen meat as compared with fresh. Relative costs per pound of frozen packaged meat compared with fresh meat, as well as consumer preferences, will play important parts here.

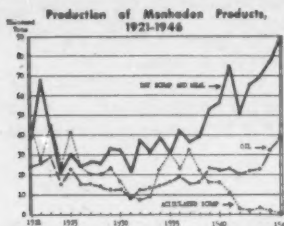
Fishery products are more readily adapted to this type of distribution than meats, so they are more widely found in these channels. However, further extension of this trade in 1947 will depend, to some extent, on the spread of facilities for handling frozen foods at retail.

--Fishery Leaflet 215

FISHERY BYPRODUCTS

Oil and Meal

PRODUCTION: The menhaden was the most important species of fish taken in the United States and Alaska during 1946, and the yield of meal and oil from this species accounted for about half the domestic production of these products.



with 6,928 tons in January 1946, according to Current Fishery Statistics No. 327.

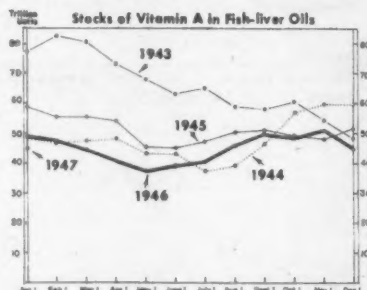


Vitamin A

STOCKS AND PRODUCTION: Stocks of vitamin A in fish-liver oil on January 1 were reported at 44.8 trillion units, an increase of less than one-half percent above stocks held on December 1, but a decrease of 8 percent under those of January 1, 1946, according to Current Fishery Statistics No. 324.

Production of vitamin A during December totaled 3 trillion units compared with 5.1 trillion units produced during the corresponding month of 1945. Total production during 1946 amounted to 56 trillion units compared with 62.6 trillion units produced in 1945.

Receipts of livers during December totaled 1,382,000 pounds and contained about 4 trillion units of vitamin A. During December 1945, 784,000 pounds of livers, having a vitamin A content of 5 trillion units, were received. Total receipts for 1946 amounted to 15,832,000 pounds compared with 13,974,000 pounds in 1945.



OTHER FISHERY NOTES

Additions to the Fleet of U.S. Fishing Vessels

A total of 71 vessels received their first documents as fishing craft during February 1947, compared with 43 in the same month in 1946. The South Atlantic and Gulf States lead with 28 vessels documented during the month, followed by the Pacific Coast States with 19 vessels. During the first two months of 1947, 135 vessels received their first documents as fishing craft compared with 85 vessels during the same period in 1946.

Section	Vessels Obtaining Their First Documents as Fishing Craft				
	February		Two mos. ending with February		Twelve Months
	1947	1946	1947	1946	1946
	Number	Number	Number	Number	Number
New England	5	6	8	9	86
Middle Atlantic	4	5	9	7	74
Chesapeake Bay	4	3	10	4	71
South Atlantic and Gulf	28	13	53	30	351
Pacific Coast	19	11	34	23	375
Great Lakes	7	3	13	8	76
Alaska	2	1	2	1	19
Hawaii	1	-	4	-	17
Unknown	1	1	2	3	16
Total	71	43	135	85	1,085

Note: Vessels documented by the Bureau of the Customs are craft of 5 net tons and over.



Canned and Salted Fish off Allocation

No fish products will be under international allocation recommendations after June 30, 1947, the International Emergency Food Council announced on March 12.

Allocation recommendations on canned fish terminate March 31, 1947 and on salted cod and related species of 1946 production on June 30, 1947. There have been no allocation recommendations on salted fish of 1947 production.

The Committee on Fishery Products pointed out that the bulk of the current canned fish pack will have been delivered or contracted for by March 31. In the case of salted cod and related species of 1946 production, the delivery period will extend throughout June. The Committee recognized that shortages may continue to exist in certain types and varieties of both canned and salted fish, but reports that world supply is coming into approximate balance with effective demand, when all fish products are taken into consideration--those not under allocation recommendation as well as those which in the past have been allocated. The Committee will keep the situation under continuous review and in case significant changes in supply and demand appear will reconsider the necessity for allocation recommendations.



FAO Fisheries Official Speaks in Newfoundland

In a talk at St. John's, Newfoundland, on March 13, Dr. D. B. Finn, Director of Fisheries in the Food and Agriculture Organization of the United Nations, called attention to the destructive effects of international competition in fisheries, and advocated instead an international approach to the industry's common problems. Dr. Finn addressed a dinner meeting in his honor sponsored by the Newfoundland Fisheries Board.

"Already surpluses of fresh and frozen fish are occurring," Dr. Finn declared. "This will probably result in more fish under salt, which will eventually produce additional surpluses and may lead to a fall in price. If this occurs the danger is that fishermen's incomes will fail to support them at minimum standards of living. Price supports, subsidies, and relief will follow. Aggressive countries will capture markets from others by one means or another, and the displaced countries will attempt to recapture their position. The resultant fight will mean ruin to all."

Dr. Finn said the answer to the problem lay first in a conviction that it concerns all countries. Willingness of all nations to examine and analyze the facts, he said, could lead to discovery of a practical program and agreement to its operation.

"No proper solution can be found in prosperity for one fellow and poverty for others. A poor fisherman in Norway, or indeed anywhere, is a liability to Newfoundland and all the rest of the fish-producing countries. Prosperity is indivisible."

If there is to be a solution it will have to include every point of view, Dr. Finn concluded. Since a solution must be sought cooperatively by all nations and represents the interests of both producers and consumers, Dr. Finn expressed the belief that FAO was qualified to bring the nations to an approach to the fisheries problem.



Halibut Season

The 1947 halibut season starts May 1, and will close November 30, according to an announcement of the International Fisheries Commission. The quota for 1947 is 53 million pounds, divided between the four areas. When each area's quota is reached, that area will be closed to fishing of halibut.

The 1947 Pacific Halibut Fishery Regulations have the following significant changes from the regulations of last year:

Section 1(a). A definition of convention waters has been added for the benefit of those not familiar with the Treaty and Enabling Acts.

Section 1(c). The boundary line between Areas 3 and 4 has been relocated. It now runs true west from Cape Sarichef Light on Unimak Island and places in Area 3 the waters immediately north of the Aleutian Islands as well as the intervening straits and passes of these islands.

Section 2(a). A catch limit of 500,000 pounds has been set for Area 4 which hitherto had no limit.

Section 3(b). Area 4 will close with Area 3 unless it has been previously closed by reason of the attainment of its own catch limit.

Section 4(c). It is provided that fishery officers can issue licenses to vessels fishing out of places where there are no customs officers.

Section 12. This section is added to permit tagged halibut to be retained and landed by any type of vessel at any time of year, provided such tagged halibut are brought to the attention of representatives of the Commission or enforcement officers with the tag still attached.

Copies of the complete regulation may be obtained by writing to the International Fisheries Commission, University of Washington, Seattle, Washington.



Registered Icelandic Vessels in 1946

According to an extract from the register of shipping, published in the Icelandic Nautical Almanac for 1947, the number and tonnage of registered vessels, over 12 gross tons, at the end of the year 1946, were as follows:

	Steam Vessels		Motor Vessels		Total	
	Number	Gross Tonnage	Number	Gross Tonnage	Number	Gross Tonnage
Trawlers	24	8,145	-	-	24	8,145
Other Fishing Vessels ..	11	2,583	444	18,841	455	21,424



Statistical Abstract of the United States

The Bureau of the Census announced recently that the 1946 edition of Statistical Abstract of the United States is available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for \$2.25. It is a summary of statistics on population, trade, production, finance, and numerous other subjects. One section is on fisheries.



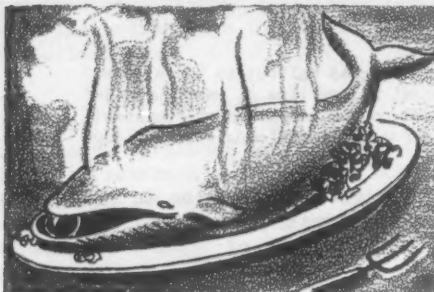
Whale Meat

The whole subject of the utilisation of whale meat for human food has, up to the present, been only superficially surveyed, but nowhere have the results suggested that any fundamental obstacle exists in the future development with the practical objective of utilising whale protein as a valuable foodstuff in one form or another, according to an article entitled "Whalemeat" by E. C. Bate-Smith¹ and J. G. Sharp in Food Manufacture, 21, pp. 371-377, Leonard Hill Limited, London.

¹/Low Temperature Station for Research in Biochemistry and Biophysics, University of Cambridge and Department of Scientific and Industrial Research.

Excerpts follow from "the work described in the article which forms part of the programme of the Food Investigation Board of the Department of Scientific and Industrial Research."

"Since, by comparison with land mammals, the limbs are greatly reduced, most of the meat on a whale is found on the trunk. Half of it, the most readily accessible, is in fact found in two muscles, the longissimi dorsi, that run from head to tail along the back. Together with the psoas muscles, which run along the inner surface of the ribs alongside the vertebral column, they are known as the back fillets and constitute 70 per cent. of the flesh. These muscles are straight-grained, and form more suitable meat than the remaining muscles of the ribs and shoulders, which are scrappy and confused owing to the complexity of the musculature in this region.



"Contrary to expectation, the muscles do not as a rule contain so much fat as do those of our ordinary meat animals. The adipose tissue of the whale, from which the oil is largely obtained, occurs as a layer of blubber around the body, quite distinct from the meat. This layer varies in thickness with the fatness of the animal, but may reach 8 inches in thickness and represent 20 per cent. of the body weight. Apart from the proportion of adipose tissue that is usually served with a grilled beefsteak, the so-called 'lean' of butcher's meat may contain as much as 12 per cent. of fat, whereas the corresponding value for whale meat does not appear to exceed 5 per cent.

"The whalers usually hang their meat in the cold Antarctic air for at least a week and sometimes for as long as a fortnight before cooking it. After hanging for a day or two the flesh hardens and blackens on the outside, the inside becoming soft and tender. Before preparation the hard black crust is cut away, the tender inside only being used. A quantity of blood drains away while the meat is hanging, and it is probable that the loss of it improves the quality or sweetness of the meat.

"One of the best ways of serving hung whale meat is as a fried steak with onions. In this form, both in colour and flavour, whale meat is not readily distinguishable from best beefsteak. It is remarkably tender, in this respect being equal to good fillet steak. In addition to its being an excellent subject for straight frying, whale meat is commonly used on the whaling grounds as a basis for the preparation of sausages, meat balls, and other made-up meat dishes. These take the place of beef or pork sausages and similar products which as a rule can only be obtained at sea in tins. The whalers also produce a 'biltong' from whale meat which has been salted and smoked. This is eaten raw, the blackened crust being cut away and the inside cut into very thin slivers and served as an hors d'oeuvre or savoury. It has an attractive smoky flavour inclined to a certain pungency associated with all cured flesh.

"It is recognised by the whalers that whale meat varies greatly in quality. It certainly varies greatly in appearance from one carcass to another, depending for the most part on the size and therefore on the age of the individual. In immature animals the flesh is pale, darkening with increasing age, that of the oldest animals being of a deep black-red. In such meat can be seen narrow white tendons

crossing at varying angles and giving to the dark meat the appearance of quartz veins in rock. This connective tissue represents, of course, the necessary mechanical support for the huge mass of contractile tissue, and its means of attachment to the ribs and vertebrae. Meat is selected for eating purposes on the basis of depth of colour, the paler meat being both more tender and of a better flavour. As the meat becomes darker, and possibly as the animal reaches sexual maturity, a stronger characteristic flavour enters into it, which can only be described as 'whaley.' There is no evidence of difference between the two principal species, Blue and Fin.

"A proportion of the catch is therefore good meat and a proportion not so good. If whale meat is to be used for food it is obviously very desirable to know how much of each quality can be expected, and how to select the meat as it is caught so that it can be allocated to its most appropriate use. The criteria employed must be ascertainable by the simplest tests, and preferably such as are normally logged by the Ministry of Agriculture and Fisheries' inspectors who accompany each expedition. These are, for instance, species and size, estimated age and weight. Actually a rough system of grading of the meat has been practised by the officers of one whaling company. In this system the whalers relied very largely upon the colour of the flesh, classifying the meat into three classes; A, pale red flesh; B, darker red; and C, very dark red, almost black.

"One can only study the data for whale meat in relation to the data scattered through the literature for the muscles or meat of other species. In a review of the composition of meat,² one of the authors drew up a table of the composition of 'typical' mammalian muscle, and it is interesting to compare the range of values encountered in a number of samples of whale meat with the corresponding items in this table.

Table 2

	Whale meat	Typical Mammalian Muscle
	Percent	Percent
Water	71.1-76.5	75
Protein	15.1-17.9	18.5
Fat	0.7- 6.3	3
Carnosine	0.42-0.67	0.5
"Anserine"	0.99-1.30	
Creatine	0.43-0.49	0.4
Purines (as hypoxanthine)	0.12-0.13	0.12
Urea	0.09-0.13	0.06
Acid soluble P	0.16-0.19	0.15
Na	0.07	0.05
K	0.295	0.42
Ca	0.004	0.01
Mg	0.022	0.03
Cl	0.026-0.128	0.06
Lactate	1.1-1.3	0.9

"Tests carried out on frozen whale meat with the personnel of, and visitors to, the Low Temperature Station as subjects have shown unequivocally that whale meat is an acceptable meat food. In the course of the tests 150 different people were invited to give their opinion on samples prepared for the table in various ways. The most exacting test was of whale meat presented in the form of fried steak. In this form the dark colour of the flesh (especially that of C grade meat) and the absence of an edging of fat was commented upon, but all subjects agreed that steaks from Grade A meat were excellent in flavour and as tender as the tenderest

²E. C. Bate-Smith, Chem. and Ind., 1942, 61, 373.

beef. Steaks from Grades B and C meat are tougher in texture and coarser in flavour. Only occasionally a slight fishiness in flavour could be detected at the edge of the steak. Fishiness was also noticed in the odour of the meat when cooking, but, except as mentioned, was absent from the cooked product.

"Whale meat canned by itself has a mild and not unpleasant fishy flavour, but canned with vegetables, for instance, this is not evident and the meat is scarcely distinguishable from beef. According to preliminary observations the fishiness seems to arise from oxidation products of fat reacting with protein to give methylamines, which are driven off during cooking. In the straight whale meat canned pack the methylamines cannot escape so freely and would therefore produce the observed fishiness. It is not known whether the absence of fishiness in seasoned canned packs is due to chemical reactivity or to a simple masking effect. Trimethylamine oxide from which in fish trimethylamine is produced was not present in the whale meat samples examined.

"The samples carried at -22° C. (-8° F.) were in slightly better condition than others brought back in a ship's refrigerator at a temperature (probably fluctuating) in the region of -10° C. (14° F.). Nevertheless, various cooked meat products, such as rissoles, pastries, meat rolls, and sausages prepared from the latter meat, were judged by 80 to 90 per cent. of the subjects to be indistinguishable from their counterparts made with beef. The minority were divided as to whether the whale meat items were better or worse than beef. In no case was any mention made of the presence of a fishy flavour."



Wholesale and Retail Prices

Wholesale prices for all foods showed a decline of 1.7 percent from mid-November to mid-December 1946. Retail prices for all foods decreased 1.0 percent for the same period, according to reports from the Bureau of Labor Statistics, Department of Labor. The average retail price of fresh and canned fish

Wholesale and Retail Prices				
Item	Unit	Percentage change from--		
Wholesale: (1926 = 100)		Dec. 14, 1946	Nov. 15, 1946	Dec. 15, 1945
All commodities	Index No.	139.7	+2.9	+30.9
Foods	do	161.3	-1.7	+48.9
Fish:		Dec. 1946	Nov. 1946	Dec. 1945
Canned salmon, Seattle:				
Pink, No. 1, Tall	\$ per doz. cans	3.189	0	+61.9
Red, No. 1, Tall	do	5.363	0	+45.2
Cod, cured, large shore, Gloucester, Mass.	\$ per 100 pounds	14.80	+2.0	+10.0
Herring, pickled, N. Y.	\$ per pound	12.0	0	0
Salmon, Alaska, smoked, N. Y.	do	35.0	0	0
Retail: (1935 = 100)		Dec. 15, 1946	Nov. 15, 1946	Dec. 15, 1945
All foods	Index No.	185.9	-1.0	+31.5
Fish:				
Fresh and canned	do	267.6	+1.0	+20.7
Fresh and frozen	\$ per pound	43.2	-0.8	+16.2
Canned salmon:				
Pink	\$ per pound can	0*	+6.8	+34.7
Red	do	0*	+9.0	+38.9

*Inadequate information

rose 1.0 percent, while that for fresh and frozen fish declined 0.8 percent during the period. Although sufficient information was not available from which to compute reliable average retail prices for canned pink and red salmon, percentage change figures were computed, based on the index, to show the trend and movement of these canned items.



MAINE'S BLOODWORM AND SANDWORM BAIT INDUSTRY

"The digging of salt water live bait ranks high as Maine's most unique industry. Yearly about 200 diggers are busy from March to December in procuring an average of 10,000,000 sandworms and bloodworms. They are sold to salt water sports fishermen from Connecticut to Washington, D.C. At the present time fishermen pay as high as 5 to 6 cents apiece for these worms. The sale of these worms bring a yearly income to the industry of nearly a quarter million dollars. Although bloodworms are sometimes used to catch weakfish and striped bass, many fishermen claim that the sandworm is a superior bait. The bloodworm is a favorite for flounders, eels, and other small fish that are caught from piers and rowboats close to shore.



"The journey of the Maine bloodworm or sandworm from the mudflat to the fisherman's hook is a long and tedious one. First, the digger searches him out of his burrow in the mud and sells him to a shipper who supplies a New York wholesaler. A retail dealer, who may operate a fishing tackle business, an auto service station, or rents rowboats, buys the worms in lots of 100 from the New York wholesaler and sells them to the fishermen.

"For shipment, the worms are packed in baskets or boxes of rock weed and most of them are sent by railway express. Occasionally a shipment is made by air express."

--Bulletin of the Department of Sea and Shore Fisheries

FOREIGN FISHERY TRADE

Imports and Exports

GROUNDFISH IMPORTS: Imports of fresh and frozen groundfish within quota limitations, under the reduced tariff, provided under trade agreements totaled 1,560,496 pounds during January, according to a preliminary report from the Bureau of Customs, Treasury Department.

Commodity	January 1947	December 1946	January 1946	1946
Fish, fresh or frozen fillets, steaks, etc., of cod, haddock, halibut, cusk, pollock, and rosefish	1,560,496	1,458,080	3,514,821	49,171,089



Australia

PEARL SHELL, BECHE-DE-MER AND TROCHUS INDUSTRY OF NORTHERN AUSTRALIA: Economic Report No. 1. This report, a publication of the Commonwealth Fisheries Office, Department of Commerce and Agriculture, Commonwealth of Australia, was prepared for the Northern Australia Development Committee. Published in 1946, it discusses the pearl fishery in detail from its beginning, in this area, in 1864.



Canada

CANADIAN PRODUCTION UP IN 1946: The total fisheries production in Canada, which increased 30 percent in value from 1944 to 1945, rose slightly further in 1946 although complete returns would not be available for another six months at least, according to a report from the U. S. Embassy in Ottawa, Canada. The total marketed value of both fresh water and sea fish caught rose from \$89.4 million in 1944 to estimated totals of \$113 and \$115 million in 1945 and 1946, respectively. The landings of sea fish during January 1947 aggregated 89.1 million pounds worth \$1.88 million, compared with 55.1 million pounds worth \$1.39 million during January 1945. The fishermen operating out of British Columbia doubled last year's catch to a monthly total of 79.32 million pounds while the strike of deep-sea fishermen in Nova Scotia led to a decline of 48 percent over last year's January figure with a total of only 4.94 million pounds, almost equaled by the 4.22 million pounds brought in the same month by the non-striking deep-sea fishermen of New Brunswick.

COLD STORAGE: Canadian holdings of fishery products totaled 31,894,000 pounds on February 1, according to a report received from the Department of Trade and Commerce, Dominion Bureau of Statistics. Compared with stocks held on January 1, this was a decline of 6,681,000 pounds, but was 12,133,000 pounds greater than February 1, 1946.



Germany

IMPORTANCE OF DEEP-SEA FISHING TO GERMAN FOOD PROGRAM: When German fishing companies resumed deep-sea fishing in July 1945, their fishing fleet consisted of but 29 vessels. A year later, the fishing fleet numbered 131 vessels and now consists of 143 vessels; however, these constitute but one-third of the number of prewar vessels, according to the American Consulate at Bremen, Germany. Catches, which totaled but 950 metric tons during the first month, gradually increased to a monthly average of 14,600 tons in 1946, as is indicated in the following table:

Monthly Catches of Deep-sea Fishing Vessels During 1946
Landings at ports of Wesermuende, Cuxhaven and Hamburg:

	Tons		Tons
January	4,800	July	11,300
February	5,300	August	33,000
March	12,200	September	33,600
April	10,600	October	30,100
May	11,900	November	11,400
June	12,200	December	9,500

The relatively high monthly average is due to unusually good catches during the herring season, particularly during the period from August to October, when 50 percent of total catches of 1946 were landed. These abundant herring catches, however, increased total catches to but 175,000 tons, as compared with 565,000 tons in 1938.

Fish Supply Threatened: Catches in 1946 were sufficient to provide for an annual consumption of 11 pounds per capita of the population of 37 millions in the British and American Zones of Occupation. Inasmuch as practically the same quantity of fish, namely 172,000 tons, has been imported, the planned allocation of 27.5 pounds per capita was almost reached.

Sources and catches of the German fish supplies are shown in the following table:

	Fishing trips		Catches			
	1938	1946	In 1000 tons		In million Raks	
Fishing Vessels total	6,500	2,188	555.3	166.3	67.1	54.3
" " to North Sea	3,206	1,802	224.5	115.1	23.9	39.0
" " Iceland	1,576	246	141.7	29.3	20.2	9.7
" " Bear Island	360	136	42.9	21.4	4.7	5.4
" " Barents Sea	557	-	55.6	-	8.1	-
" " Lofoten Islands	175	-	21.6	-	2.4	-
" " Norwegian Coast	619	-	68.7	-	7.9	0.1
" " Other districts	7	4	0.4	0.4	-	-
Deep-sea cutters	2,891	2,495	5.6	8.2	2.2	6.3
Coastal cutters	16,078	4,151	3.9	1.8	0.7	1.1
Totals	25,469	8,835	564.9	176.2	69.9	61.6
Shipments	-	-	10.9	3.1	4.1	1.5
Imports	-	-	77.6	172.0	13.4	86.5
Totals including herring	-	-	653.4	351.3	87.4	149.6
	-	-	236.6	215.3	32.9	86.3

German economists recommend an increase in the supply of fish, at least for such period until supplies of meat or any kind of high quality of albumin are available again. An increase in the supply of fish, however, can only be accomplished by increasing the catches of German vessels. Last year's catches were entirely insufficient to fill requirements, they even decreased considerably during the winter months, thus threatening the supply of the large cities. Curtailment in the fish supply would practically mean a cut in the daily food ration, as fish is included in the daily allocation of 1550 calories.



Iceland

ICELANDIC MINIMUM FISH PRICE GUARANTEE LAW: Copies of the original texts and English translations of the Icelandic Minimum Fish Price Guarantee Law of December 22, 1946, and the Schedule of Minimum Fresh Fish Prices that was issued by the Ministry for Labor on December 30, 1946, have been made available by the American Legation at Reykjavik, Iceland.

The Legation reports that according to various members of the Althing, the law is a temporary measure intended to encourage the fisheries to continue maximum production by assuring profitable returns to the cod and other white fish industries at their present inflated wage and cost levels irregardless of fluctuations or decreases in export marketing prices that may appear in 1947. It grants a general increase of 30 percent in prices to the fish producers and guarantees that increase by authorizing the Government to pay the producers the difference between the guaranteed minimum prices and possible lower export sales prices. This guarantee is not granted to the herring industry as its prosperity in 1947 seems to be assured.

It is generally believed that export prices for 1947 herring and herring products will be more than 30 percent higher than they were in 1946. This is believed most likely in the case of herring oil which has been increasing greatly in price due to the continued world shortage of edible fats and oils. As will be noted among the provisions of the law, any returns accruing to the herring industry in 1947 above the level of 30 percent over 1946 prices is to be placed in a fund for paying off possible Government expenditures in connection with subsidy payments that may have to be made to the cod and other white fish industries.



That this law does not help to alleviate the inflation is recognized. It will be noted that its final provision calls for the appointing of a committee to recommend ways and means of preventing further inflation. Although the law stipulates that this committee shall make its recommendations prior to February 1, 1947, there have been delays in deciding about the persons to sit on the committee, and it had not yet been formed in mid-February.

Translations of the Icelandic Minimum Fish Price Law of December 22, 1946, and the Schedule of Minimum Fresh Fish Prices issued by Ministry for Labor, December 30, 1946, follow:

ICELANDIC MINIMUM FISH PRICE LAW OF DECEMBER 22, 1946

Article 1. The Government, on behalf of the Treasury, guarantees the measures provided for in Articles 2-4 for the purpose of securing for the motorboat fishing industry in the year 1947, a price of 65 auras per kilo (approximately 5 cents per pound) of fresh fish, based on cod and haddock, gutted with head.

Article 2. The Treasury guarantees refrigeration plants the difference between the sale price of cod and haddock* and Kr. 1.33 (approximately 9 cents) per pound f.o.b., but the guarantee must not, however, exceed 35 auras (approximately 5 cents) per pound. The price of other species of fish shall be proportional.

Article 3. The Treasury guarantees saltfish exporters the difference between the selling price and Kr. 2.23 per kilo (approximately 16 cents per pound) f.o.b., based on fully cured large cod first class, and the prices of other classes and species of fish shall be proportional. A proportional price shall be guaranteed for exported dried fish.

Article 4. In order to guarantee a price of 65 auras (approximately 5 cents) for fresh fish, and the sale of the catch, the Government is authorized to guarantee the price of exported fish which is processed in a manner other than provided for in Articles 2 and 3.

Article 5. The Government is authorized to issue instructions concerning the processing of fish in accordance with marketing possibilities.

Article 6. In order to meet the expenditures which may result from the guarantees provided for in Articles 2-4, the Government shall retain and place in a special guarantee-fund that part of the 1947 sale-price of herring products which exceeds the price received for unprocessed herring in 1946 plus an increase in proportion to the increase in the price of fish provided for in Article 1 and processing (production) costs.

If there is a credit balance in this fund it shall be divided between the fish producers (entrepreneurs) and the seamen, in proportion to the herring catch of each vessel.

The Government is authorized to establish independent guarantee districts on recommendation of the Federation of Icelandic Fish Producers, and there will be a particular (separate) guarantee-fund for each district thus established.

The Guarantee-Tax on exported or sold herring products shall be paid into the guarantee-funds in proportion to the catch of the district compared with that of the whole country.

The Government shall establish more detailed regulations regarding the guarantee-districts and funds.

Article 7. The minimum price of fresh fish based on the 65 aura (5 cents) price provided for in Article 1 shall be published prior to January 1, 1947, and the price of other species of fish shall be proportional. The Federation of Icelandic Fish Producers shall be consulted in the price fixing.

Article 8. The Government may issue more specific regulations concerning the execution of this Act, including affidavits to the effect that share-seamen and fish producers who sell their catch to others have received the minimum price provided for in Article 7, since the reason for the Government measures and guarantees provided for by the Act is the payment of this price for fish.

Article 9. The Government shall appoint a committee of four members, chosen by the Althing Parties, for the purpose of recommending ways and means of preventing further inflation and this committee shall report its recommendation prior to February 1, 1947.

*Editors' Note: Presumably reference is to frozen fillets.

Article 10. This Act takes immediate effect.

NOTICE OF MINIMUM PRICE OF FRESH FISH

In accordance with the provisions of Article 7 of an Act of December 28, 1946, on Government Guarantee for the Motorboat Fishing Industry, etc., it is hereby determined that from and including January 1, next, the minimum price of fresh fish shall be as follows:

	Per kilo	Per lb.
Cod, Haddock, Ling, and Dab:		
With head	Kr. 0.65	4.56¢
Without head	0.845	5.94
Norway Haddock (Rosefish) and Tusk (Cusk):		
With head	0.27	1.89
Without head	0.36	2.53
Coalfish (Pollock):		
With head	0.34	2.39
Without head	0.45	3.16
Skate Wings:		
Large	0.50	3.51
Small	0.35	2.46
Halibut over 15 kgs. (33 lbs.)	4.50	31.6
Catfish (Wolffish): In usable condition, with head ..	0.45	3.16
Flatfish other than Megrin, Witch, Dab, and Halibut over 15 kgs. (33 lbs.)	1.80	12.65
Megrin and Witch	0.85	5.97
Dogfish	0.20	1.41

These provisions remain effective until otherwise determined.

MINISTRY OF LABOR, December 30, 1946.

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SEA FISHERIES OF ICELAND: The landings of groundfish and herring in Iceland during 1946 were 16 percent greater than those during 1945, according to Statistical Bulletin issued by the National Bank of Iceland and The Statistical Bureau of Iceland.

The following table gives a break-down of the landings of groundfish and herring, and the disposition of the groundfish catch for the last 2 years.

Landings	1946	1945
	Pounds	Pounds
Groundfish	432,940,000	492,492,000
Herring	289,786,000	130,259,000
Total catch	722,726,000	622,751,000
Disposition of groundfish catch:		
Iced	193,472,000	343,983,000
Frozen	160,820,000	131,531,000
Dried	1,619,000	4,034,000
Canned	1,799,000	611,000
Salted	69,790,000	7,275,000
Home consumption	5,438,000	5,055,000

NOTE: All groundfish weights are for drawn fish.

India

The Department of Agriculture, Government of India, is currently endeavoring to stimulate the production and marketing of fish, both marine and inland varieties, states a recent report from the American Embassy at New Delhi, India.

The average annual net available supply of fish is estimated at 170.5 lakhs of maunds (1398.1 million pounds) of which 107.9 lakhs (884.78 million pounds) are sea fish and 62.6 lakhs (513.32 million pounds) are fresh water fish.

An examination of the data relating to the production of sea fish leads to the conclusion that marine fishing has made very little progress in India in recent years.

It is reported that the annual catch of fresh water fisheries is progressively declining. The population of India, on the other hand, increased by 15 percent during the decade ending in 1941. The conclusion is inescapable, therefore, that the per capita consumption of fish has declined appreciably in recent years.

In view of the scarcity of food in India, and the relatively undeveloped state of its fishing industry, it is likely that for many years to come India will be able to use all the fish the industry can catch.

The present situation of the fishing industry can probably be best described by the following quotations from a recent publication--"Report on the Marketing of Fish in India"--by the Agricultural Marketing Adviser:

"At present the maritime and riverine fisheries of India occupy but a minor place in the economic organization of the country. Fishery experts in India agree that 'tanks,' ponds, and rivers are capable of maintaining large populations of edible fish and that it is merely a question of development and adequate scientific control in order that pisciculture may become an important source of food. Evidence is not wanting that a substantial percentage of the catches landed at present are allowed to go waste. Scattered fishing centers, primitive methods of capture, preservation and transport, and the inadequacy of marketing facilities are responsible for this state of affairs. In India, the occupation of fishing and of dealing in fish is looked upon as a mean one, to be carried on exclusively by the lower classes. There are very few instances of men with education and capital entering the fishing industry. The result is that the fishing industry in India is essentially a cottage industry financed by a large number of petty owners and traders and worked mostly by the illiterate (but not unintelligent) section of the population. 'Fisheries' has been a provincial subject since the Reform days and, so far, local Governments in India have insisted upon the Fisheries Departments paying their own way.....

"Fish are caught from every piece of water in this country. The chief sources of supply are the coastal margins of the sea, river, estuaries, and back-waters for marine and estuarine fish, and rivers, irrigation and other canals, lakes, tanks, inundated tracts, jhils (small country lakes), etc., for fresh water fish.

"India has a coast line of 3,220 miles. The total area of the sea which lies between the coast and 100 fathoms line is approximately



115,000 square miles. Only a small portion of this area is worked; there is practically no deep sea fishing, the boats are generally of the catamaran or canoe type and night fishing is not general."

The Central government has no authoritative jurisdiction over this subject.

In a speech broadcast over the All-India Radio (New Delhi) on January 13, 1947, Dr. Bains Prasad, Fisheries Adviser to the Government of India, said, in part:

"...The steps that are at present being taken by the Government of India in respect of the Marine Fisheries consist in providing increased facilities for fishermen in Bombay, Bengal, and Sind and Travancore State to obtain timber, yarn, sail-cloth, coal tar, fishhooks, ice for preservation, and finally motors and engines to be fitted on the fishing boats to enable them to transport fish as quickly as possible from the distant fishing grounds to the consuming centers. The fishing trade is being given facilities for importing fishing craft and gear, ice and cold storage plants, so that fish caught can be properly preserved in ice and transported rapidly from the fishing to the consuming centers. It is hoped that the Indian railways will also provide regular refrigerated vans on their fast services for the carriage of fish to the inland markets.

"Finally the Government of India are about to start a Scheme of Pilot Fishing to find out the most suitable craft and gear for use in Indian waters. Four different types of modern fishing vessels together with equipment have already been ordered from the U.S.A. and U.K.

"The question of starting scientific investigations in order to put the fisheries of India on a sound foundation, has, therefore, been actively taken up by the Government of India. While a Central Fisheries Institute is to be established in due course, fishery surveys and investigations on selected subjects will soon be started at the existing fishing and research centers."

There are practically no imports of raw fish into India.

Imports of dried fish (salted and unsalted), wet-salted and canned fish, fish products such as cod-liver oil and fish waste averaged 140,376 cwts. (15,722,112 pounds) valued at Rs. 1,634,966 (\$494,700) for each year during the 12 years ending with 1941-42.

Canned fish consumed in India are wholly imported. The United States furnished 20.6 percent, or an annual average of 528.8 tons, of the imports during the 12-year period ending in 1940-41. Nearly 60 percent of the imports came from the Empire countries, Canada and the United Kingdom sharing almost equally in this trade.

It is considered doubtful, according to the Report, if any Indian canning industry could compete with a reasonable chance of success in this specialized market. Europeans and Anglo-Indians, who form the bulk of the consumers of canned fish, prefer salmon and herring to any of the Indian varieties.

Canned fish, it is stated, cannot be adapted to the Indian method of cooking as the average Indian prefers to cook his own food in his house rather than take something ready made and touched by "undesirable" hands.

Certain of the maritime provinces and States have built up an export trade in preserved fish to Ceylon, Burma, and countries in the Far East. Exports of

preserved fish averaged 353,238 cwts. (39,662,656 pounds) valued at Rs. 7,824,725 (\$2,367,900) per year for the 9 years' period ending with 1940-41. During the same period the exports of fish waste averaged 95,651 cwts. (10,612,912 pounds) valued at Rs. 406,294 (\$122,950) per year. Exports of fish waste have been steadily increasing since 1933-34.

The consumption of fish both fresh and preserved, is limited not only by low production but also by the almost total lack of refrigeration either at the ports or for transport or at markets, extremely crude and poor curing methods, religion, caste, customs, prejudice, and last but not least--by cost.



In the interior of the country fresh fish (including sea fish) is a luxury even for the middle class people and sun-dried or cured fish are not very popular with the majority of consumers. Both fresh water and sea fish have to compete with meat and are much more expensive.

As with many other foods, the readiness with which fish is consumed, depends upon customs, religion, and prejudice. To a westerner, the fact that hungry or starving Indians, or Indians living on a totally inadequate or unbalanced diet, will refuse certain foods because of customs, or prejudice, or religion--is baffling and exasperating. Caste plays an important part in the diet. Brahmins (except the Kashmiri pundits and residents of Bengal and certain portions of Bihar), certain sections of caste Hindus (from 15 to 35 percent), Jains and Buddhists totally reject fish as food. Hindu widows in Bengal are prohibited by custom from eating fish. Another peculiarity of Indian consumers is said to be that those accustomed to eating fresh water fish have no liking for sea fish, and similarly those accustomed to sea fish seldom eat fresh water fish.

It is extremely problematical whether the advice and suggestions of the Indian Department of Agriculture for furthering the production of both sea and fresh water fish, will have any substantial effect in the face of current customs, prejudices, and religious scruples against eating any animal foods, lack of refrigeration and refrigerated transport, and the comparatively higher cost of fish foods.



Korea

U. S. COMMERCIAL COMPANY IN KOREA: A contract was signed with the United States Commercial Company to control and supervise the sale of Korean products in the United States on a government-to-government basis, according to General MacArthur's December summation of Military Government activities there. The company will not have an exclusive contract, but its facilities for disposing of certain products, such as minerals and metals, will supplement private trade. Included in the first Korean cargo, which left December 25 for the United States, was 67,950 pounds of fish liver oil and 16,961 pounds of fish creels.



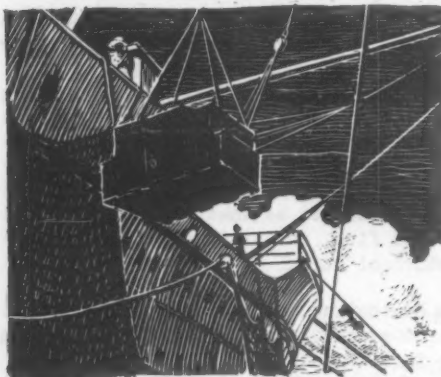
Mexico

SHRIMP PRODUCTION: Shrimp fishing at Guaymas, Sonora, reached its peak during the month of March, according to the American Consulate at Guaymas, Sonora, Mexico, with most of the fleet operating in the waters near the mouth of the Colorado River. Prices maintained good levels and volume shipments of both fresh and frozen shrimp were exported to the United States, principally to West Coast points. An extension of the season beyond April 15 was requested by the industry, but no action by the Mexican Government had been reported in this regard. It was generally believed, however, that an extension would be granted until May 31.



Netherlands

THE FISH PRESERVING INDUSTRY: The fish preserving industry in the Netherlands is being forced to look to the export field as the demand on the domestic market is being satiated, according to the American Consulate General in Amsterdam. During the war, the industry expanded because competition from foreign sources was restricted and the domestic demand was high.



The value of the output of the fish preserving industry was \$190,000 in 1938 and \$1,819,440 in 1943. Production decreased considerably after September 1944, but soon after the end of the war the pre-war production level was again reached or even surpassed. At present the production capacity is too large for the domestic market.

Exports in 1938 were 1,196,934 pounds valued at \$84,521. During the war no exports were made, but increased production was absorbed on the domestic market. It is estimated that the value of exports in 1946 may be as high as \$380,000. The industry is now able to export such items as herring in oil, herring in tomato sauce, fried herring, various mackerel products, smoked and stewed eel, chopped fish and fish paste. In 1945, an Inspection Commission was established to prevent the export of poor quality preserved fish.

The fish preserving industry came into being a few years before the war, and there are now 43 plants, of which 15 are mussel packing and processing factories. Thirty-six of the plants are located in the western part of the Netherlands near the seacoast. IJmuiden, Utrecht, Amsterdam and vicinity, and Zaandijk are among the centers of the industry. Some of the plants handle only fish, while others are connected with the vegetable and meat processing industries.



Newfoundland

NEWFOUNDLAND'S FISHERIES: At the 38th Annual Meeting of the Newfoundland Board of Trade, Mr. J. T. Cheeseman, formerly a member of the Newfoundland Fisheries Board, spoke on the future of the fisheries in Newfoundland. His remarks are reproduced, in part, as follows:

"In my opinion there is nothing to indicate that there is likely to be any serious recession, particularly in the price of salt codfish, during the current season but clouds are beginning to appear on the horizon and the situation indicates that caution should now be exercised in all branches of the fish industry.



"Some of the darker clouds that I refer to overshadow the following branches, viz.

- "Salt Cod:**
- (a) Shortage of foreign exchange and lack of political stability in Greece, Italy and Spain, which were amongst our larger customers in prewar days.
 - (b) Increasing production by the Portuguese National Fleet since 1941, which increase has been more than 50 percent and the fleet of modern fishing vessels is becoming larger and larger. Portugal has for centuries been one of our largest buyers, taking practically all of our Bank fish as well as large quantities of Shore fish.
 - (c) Our chief competitors, Iceland, Norway and Canada, with their greatly improved production facilities will be giving us stiffer competition than ever.
 - (d) High costs of handling here due to lack of centralization, high priced packages, and excessive overhead costs, caused largely by antiquated handling facilities.

"Fresh and Frozen Fish: The production and export of frozen fish from this country, almost entirely cod fillets, has since 1939 increased manifoldly; for instance, total production in 1940 was approximately 7,000,000 pounds and in 1946 was 29,832,285 pounds. Therefore, in my opinion, the immediate outlook for our frozen fish industry is, to put it as gently as I can, uncertain and weak. The principal weaknesses that appear to me are:--

- "A. As a result of demand, created largely by the war, production in Newfoundland and other countries increased much more rapidly than the present means of distribution, with the result that as relief agencies discontinue buying and United States housewives are buying less than in the war years when meat and other foods were scarce, stocks are piling up in the cold storages in both producing and consuming countries.
- "B. The principal foreign producing countries look almost entirely to the United States to buy their ever increasing quantities of fish at high prices.
- "C. Insufficient distributing facilities, insufficient advertising.

"D. Retail prices are, in comparison with many other well advertised foods, too high.

"E. Insofar as our local situation is concerned, it is subject to all the external weaknesses that I have referred to, plus a number of purely local difficulties over which we have no control, and others over which we have control but stubbornly refuse to act to overcome them.

"Amongst the local handicaps beyond our control are:

- "1. We have no home market of consequence for fresh or frozen fish, consequently are wholly dependent upon export markets, a situation which does not apply in any competing country.
- "2. Remoteness from consuming markets, necessitating large storage facilities in proportion to total production, which entail high capital costs and carrying charges.
- "3. We produce almost entirely one species of fish, viz. cod fillet, whereas, United States distributors must also be able to supply retailers with other species. Therefore, in normal times when supplies are plentiful the major portion of the orders from retailers might be expected to go to distributors who can supply cars of mixed species.

"I know of at least one Newfoundland producer who finds it necessary to purchase supplies of rosefish fillets and other species in the United States in order to boost the sale of their cod fillets in that country.

"4. We have to import and pay transportation charges on all plant equipment and packaging material.

"5. We have the added cost of freight and insurance on our products from Newfoundland to the mainland.

"These two last mentioned items alone put us at a disadvantage of from 1 to 1½ cents per pound as compared with operators on the mainland.

"And of the handicaps which we could control, I mention what seem to me to be the most obvious:

"A. Almost entire lack of modern methods of fishing, resulting in uneconomic catches per man.

"B. Lack of centralization, which increases cost of management and general overhead charges, makes it uneconomical to operate plants for processing the offal which amounts to approximately 60 per cent of landed weight.

"C. The system of cutting and trimming large quantities of fish remote from freezing plants and then hauling the fillets long distances in warm weather by ordinary trucks over rough roads, which is definitely injurious to the quality.

"D. The fact that each of the Newfoundland operators employ separate selling agencies in the United States makes the selling cost considerably more expensive than if all the selling in that country was done through one agency.

"The point that because we are near prolific fishing grounds means we necessarily produce the best fish in the world has been overstressed. Fast modern fishing boats now employed by our competitors have taken away considerable of the advantage that we once enjoyed by our proximity to fishing grounds.

"It is not strictly correct to say that there is yet an over-production but the effect is the same as though there were. The fact is that there is now being more frozen fish produced than can with present selling methods and distributing facilities be readily distributed.

"It is much more difficult to provide quickly such distributing facilities as refrigerated trucks and railway cars, regional refrigerated warehouses, refrigerated holding chambers and display cases in the potential areas of consumption than it is to provide fishing boats and nets and processing plants at the points of production. When the facilities for distributing, backed by large scale advertising, are provided, the consumption of frozen fish will be sufficient to take care of greater production, always provided that the quality is reliable and the price to the consumer comparative with other foods."



Norway

OBSERVATIONS ON NORWEGIAN FISHERIES: During a trip to northern Norway, an opportunity was presented for observations of the Norwegian fisheries, particularly at Trondheim and the Lofoten Islands, according to a report of the American Embassy at Oslo.

One of the first plants visited was at Trondheim. It has one large automatic filleting machine but most of the other processes are performed by hand labor.

The next stop after leaving Trondheim was at Bodø, north of the Arctic Circle, which was devastated by the Germans in 1940. The town of Bodø is now about one-third rebuilt. The present population, many of whom were forced to go to southern Norway after their town was destroyed but have since returned, are industrious and determined not only to rebuild their community but to make it more important as the agricultural, forestry, and fishing resources of the area adjacent to Bodø are further developed.

The first spot visited in the Lofoten Islands was Stamsund, a small fishing center located about 40 kilometers south of Svolvær, the principal town in the Islands. There an opportunity was afforded to members of the party to transfer into small fishing boats and go out with the fishing fleet to observe the cod fishing. In this part of the fishing grounds, most of the fishing is done by hand line. A considerable proportion of the fishing boats were motor boats of from 2 to 15 or 20 tons. The smaller boats towed one or two dories, each containing a single fisherman who operated a hand line with one hook. The larger boats towed as many as four or five dories. Several fishermen also worked from the parent boats.



Fishing in the Lofotens is a traditional occupation, passed down through families for many generations. A large proportion of the fishermen are farmers from the mainland who add to their farming income by fishing, during the winter season, in the Lofotens. They are a hardy, courageous people, but are highly conservative and the evolution of fishing technique in the Lofotens has taken place very gradually. Motor boats were first used there in 1903. For some time, they encountered the same opposition as the early automobiles experienced, but today most of the fishermen operate motor boats, many of which are purchased with the financial assistance of the Government.

The fishing gear used in the Lofotens, however, is, in principle, much the same today as it has been for many years. The use of the old fashioned hand line with one or two hooks is still the general practice, but the tendency for the individual fishing boats to use a larger number of dories and a correspondingly larger crew, has resulted in larger catches. Increasing use of motor propelled capstans, both by boats using long lines and nets, has made possible the use of a greater amount of gear and increased the catch.

The Fisheries Department of the Government is conducting experiments in new types of fishing gear on the Lofoten fishing grounds. Formerly, only stationary gear was used but the Government has subsidized experiments with "active" gear suitable for pelagic fishing. Experiments are also being made with seines and drive bags.

It is not necessary in this report to describe in detail the well-known natural conditions which make the Vestfjord an immense landing net which traps the codfish as they are forced into it by storm and ocean currents. Along the so-called "Lofoten Wall," formed by mountains emerging sharply from the sea, lie the rich fishing grounds which often extend down to a depth of over 200 yards, sometimes near the Wall, sometimes as far as 12 miles off shore. Nature has formed this region in such a way as to provide a very bountiful supply of cod which could undoubtedly be more effectively exploited by the introduction of more modern fishing methods. This season there are approximately 20,000 fishermen and about 5,500 boats on the Lofoten fishing grounds. Introduction of more modern methods would result in the unemployment of a considerable number of fishermen. This fact would make the problem difficult in any country; the independence and conservatism of the Lofoten fishermen make it a particularly difficult problem for Norway. It seems evident, however, that the gradual introduction of more modern fishing methods will be only a matter of time.

Fishing is strictly controlled in the Lofotens in order to insure the quality of the fish caught. Fish are killed as soon as caught and gutted as soon as possible. Most of the gutting is done while the vessels are en route to the fishing stations. The catch is culled in the hold, the liver and roe are poured into barrels, and the offal is thrown overboard.

The fishermen are all members of the Norwegian Association for the Sale of Raw Fish and the fish processors are organized in their own association. Prices and conditions of sale are fixed at the beginning of the season through negotiations between the Government's Price Directorate, the Ministry of Fisheries, and the Fishermen's Association. This practice has ended the former abuses which are understood to have resulted from the establishment of private buying monopolies where the fishermen were continuously at the mercy of the whims of a few wealthy buyers whose position was entrenched and whose prices had to be accepted by the fishermen who had no alternative market.

Some of the cod caught in the Lofotens are processed in plants at Stamsund, Svolvær, and other communities in the Islands. Fresh cod is exported in ice, either beheaded and gutted, or as fillets. Since the development of quick freezing methods, large quantities are also brought to plants where, like the ones at Trondheim and Bodø, the cod is processed and exported as frozen fillets. Some cod is also exported as lightly salted fillets. Most of the skrei (spawning cod) is made into split salted cod, stockfish, or air-dried cod. After sorting, the finest roe is sent at once to the canning factories. Most of the roe, however, is salted in barrels and is normally exported. The liver is sent to the fish oil factories and the cods' heads, backbones, and other offal are dried and ground in facilities centered around Svolvær and Stamsund in the Islands.

The smallest catch recorded for the Lofoten fishing grounds was 49,000,000 pounds in 1918. The record catch during the 100 years for which statistics exist was 286,000,000 pounds in 1929. The average catch is about 176,000,000 pounds per year.

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WHALE AND HERRING OIL PRODUCTION, 1947: The American Embassy at Oslo, Norway, reports that according to a compilation of reports received from seven floating factories and one land factory, whale oil production has reached a total of 575,718 casks, or nearly 96,000 metric tons (one metric ton equals six casks). This compares with the production of the entire 1945-46 season (six floating factories and one land factory) of 518,842 casks, or 86,400 metric tons.

Norwegian authorities estimate, taking into consideration the possibilities of unfavorable weather, that production during the present season may total 850,000 casks, or 140,000 metric tons. The season will end April 7, 1947.

Prices obtained for the 1945-46 season production ranged from 67½ to 70 pounds sterling (\$272-\$282) per metric ton and it is not expected that prices will be any lower this year. Prices received in the years 1936 to 1939 per metric ton are as follows:

Year	High		Low	
	£	\$	£	\$
1936	23-0	93	17-10	69-40
1937	24-0	97	17-0	69
1938	14-15	56-61	12-10	48-40
1939	40-0	161	12-0	48

It is expected that the 1946-47 production will carry a value of between 9½ or 10 million pounds sterling, or nearly 200,000 million Norwegian kroner (\$40,000,000). The Norwegian whaling industry has never before received such a high gross income; however, it is pointed out that the prices of new ships, seamen's wages, materials, fuel, etc., are much higher than those prevailing before the war.

The Norwegian Association for the Sale of Herring Oil reports, according to preliminary estimates, that at least 10,000 metric tons of herring oil have already been produced this season. The entire production during 1946 was only about 14,000 metric tons. The 1947 production is now expected to total not less than 20,000 metric tons. The limiting factors are plant capacity and storage space. All available storage space is now filled. The catch of herring, this year, has been abnormally high:

Production of herring oil for 1938 through 1944 has been as follows:

Year	Metric tons
1938	25,000
1939	19,000
1940	25,000
1943)	7,000
1944)	

Prices obtained during 1946 were 67 pounds 10 shilling (\$270) per metric ton. Apparently no sales for the 1947 production have yet been negotiated. However, it is reported that Iceland herring oil producers are asking 150 pounds sterling (\$605) per metric ton, although it appears that the Norwegian producers are not convinced that actual sales will be that high. At any rate, they are using a figure of 100 pounds sterling (\$403) per metric ton in appraising the value of the 1947 production.



Philippines

SPONGE INDUSTRY: The sponge industry in the Philippines has always been a minor one, concentrated around Jolo in the Sulu Archipelago, according to a report from the American Embassy in Manila. In 1940, there were two sponging boats operating with four divers and eight other crewmen and production amounted to 6,600 pounds. There were no exports in 1940 and most of the 1940 production was destroyed by fire during the war. Exports averaged only a few hundred pounds a year, which went entirely to the United States.

The limited sponging equipment, including boats and warehouses, was entirely destroyed during the war and it has so far not been replaced, largely because of lack of capital. There have been a number of inquiries received from abroad and the Chief of the Division of Fisheries of the Philippine Government believes that the industry could be built up to a point beyond the prewar standard if capital and equipment could be made available.

The price received before the war was approximately \$1.00 a pound for the "Elephant Ear" or flat sponge and \$1.50 a pound for selected varieties. Present prices would depend on prices quoted by purchasing countries, but would probably have to be about twice the prewar prices in order to interest producers, because of the general increase in the price level. There is no domestic demand for sponges.

Stocks on hand, according to the Chief of the Division of Fisheries, amount to 11,000 pounds. It is believed that these must be of a very inferior quality, however.



FEDERAL LEGISLATION, DECISIONS, ORDERS, ETC.

Department of Agriculture

CANNED FISH: The Department of Agriculture announced that WFO-44, which set aside a portion of the canned fish pack for government purchase, had been terminated on March 9, 1947. Practically all of the 1946 set-aside quotas for canned pilchards and canned salmon--the only types of fish remaining under the order--have now been purchased.

Emergency restrictions on the sale and delivery of canned fish have been in effect since May 1942. These restrictions were instituted in order to insure efficient distribution of canned fish and canned shellfish to meet war and essential civilian needs. After the cessation of hostilities, restrictions were continued to facilitate purchases for military and relief feeding and for our former allies. With military and other demands now reduced, the Department has found it possible to cancel the set-aside order.

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SHORT SUPPLY COMMODITIES: As required by the Price Control Extension Act, Acting Secretary of Agriculture N. E. Dodd, on February 28, certified to the Temporary Controls Administrator the changes, effective March 1, 1947, in the list of agricultural commodities originally certified as in short supply on September 1, 1946. No new commodities were added to the list. The following commodities were removed: Fresh and frozen fish of the following species:

Maine sardines Tuna Yellowtail Bonito Other tuna-like fish Pilchards



Civilian Production Administration

CAN SIZES: All size restrictions on tinplate and terneplate cans have been removed, the Civilian Production Administration announced on March 7, 1947. Action was taken by amending Order M-81 which retains plate specifications.

The object of the size restrictions in M-81, which was issued in February 1942, was to give the public food in economic packages and at the same time eliminate the use of small and intermediate cans which would have used more tin per volume of food packed.

In announcing the removal of can size limitations, CPA said that an allotment for 1947 of 32,000 tons of tin for the tinplate industry for all purposes had been tentatively agreed upon, but would not be increased because of the relaxation of can size specifications. Because of the tin supply situation, it now appears doubtful whether the entire amount of the tentative allocation will be available to the tinplate industry during the year, CPA added.

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HARD CORDAGE FIBERS: Processors' supplies of hard cordage fibers are at a dangerously low level, the Civilian Production Administration announced on February 28, 1947, after a meeting with the Cordage Industry Advisory Committee.

Franklin F. Kidd, Chief of CPA's Wool, Cordage, and Textile Machinery Branch, pointed to the following contrast between the cordage fiber supply position and requirements for December, January, and February (in millions of pounds):

	Supply		Requirements	
	Manila	Sisal	Manila	Sisal
December 31, 1946	25.3	48.2	8.2	17.2
January 31, 1947	21.4	43.5	7.4	18.3
February 28, 1947	14.0	25.1	7.4	18.3

These figures show that the monthly supply is decreasing more rapidly than monthly requirements, CPA said. Although the figures indicate that monthly supply is in excess of requirements, the inventories are at a critically low level because processors should have six months' supply of fiber on hand to carry them over seasonal periods when receipts are light.

At the end of January, Mr. Kidd said, manila on hand or en route was down to 1.8 months' supply, sisal stood at 1.4 months' supply, and the binder and baler twine inventories were at 1.3 months' level. CPA said there was no indication that the fiber supply situation would improve before the end of 1947.

The committee recommended that CPA amend the cordage order, M-84, to raise processors' allowable inventories on abaca from the present 90 days' to 150 days' needs, and that to simplify inventory reporting the date of invoice be considered the date of transfer of fiber from importers to processors.

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TIN: It is estimated that the government's reserve stocks of tin, exclusive of those held for emergency stockpiling, will be exhausted by the end of 1947, the Civilian Production Administration forecast, on February 26, in a report on the tin situation.

Without conservation controls such as those provided by orders M-43 and M-81, the government's tin stocks would be exhausted much more rapidly and consumers soon would be in extreme difficulty because of the lack of adequate imports to replenish stocks, the CPA said.

Total tin stocks in the United States declined by nearly 14,000 tons in 1946. Because industry stocks already were at minimum working levels, the entire drop was in government stocks, which were reduced to 53,337 tons.

Controls on the use of tin were relaxed during 1946 so that the consumption rate was higher in the fourth quarter than the average for the year. This relaxation was not warranted on the basis of 1946 supplies, which were no greater than in 1945, but was made in the hope that large-scale production in the Far East would be resumed in late 1947 or 1948, the report says.



War Assets Administration

SURPLUS PROPERTY: Surplus property disposal activities of the Maritime Commission, with the exception of ships and small vessels, will be transferred to War Assets Administration effective at the close of business April 5, 1947.

In a joint announcement on March 14, 1947, by the two agencies, it was estimated that the total reported cost of the inventory to be transferred would not exceed \$20,000,000, since approximately 85 percent of the marine material declared to the Maritime Commission has been sold.

The Maritime Commission will transfer to War Assets Administration all declarations of surplus property received after March 10, 1947; will stop all sales after March 21, and on April 5 will transfer all remaining declarations and certain personnel. The declarations and other documents such as inspection reports will be sent to the War Assets Administration office of the region in which the property is located. Sales after April 5 will be handled through the War Assets Administration regional offices.

Items included in the transfer are marine engines, ship's turbines, winches, windlasses, navigation equipment, anchors, life saving equipment, etc.

Only the activities of the Maritime Commission Materials Disposal Section are to be transferred. The action does not affect activities of the Maritime Commission relating to large and small vessels nor the owning agency sales by its Surplus Property Division.



FISH REFRIGERATION

When fish are frozen and stored at a low temperature, the action of the bacteria is almost entirely arrested, and, for all practical considerations, this type of spoilage is eliminated so long as the fish are held in a frozen condition. There are some types of bacteria which are able to resist extremely low temperatures by remaining in a state of hibernation. These types may cause considerable damage through spoilage if the temperature of the storage room is for any reason raised to a point favorable for growth, or if defrosting occurs during transit from one point to another.

The oxidation of the oil or fat is another source of spoilage of frozen fish, even in cold-storage rooms at low temperature. Low temperatures usually employed in the storage of fish retard but do not entirely prevent the chemical combination of oxygen and the oil or fat of the fish. If the fish are stored over long periods of time, the development of rancidity in the oil or fat is more likely to occur than when the storage period is only of short duration.

This and additional information relating to fish refrigeration is contained in Fishery Leaflet 214, which may be obtained, free of charge, from the Fish and Wildlife Service, Merchandise Mart, Chicago 54, Ill.

RECENT FISHERY PUBLICATIONS

Listed below are informational publications which recently have been processed by the Division of Commercial Fisheries. FL publications are available, free of charge, from the Fish and Wildlife Service, Merchandise Mart, Chicago 54, Ill. Other listed publications may be obtained, also free of charge, from the Division of Commercial Fisheries, Fish and Wildlife Service, Washington 25, D. C.

Number	Title
CFS-304	- Canned Fish and Byproducts, 1945
CFS-313	- Frozen Fish Report, January 1947
CFS-315	- Maine Landings, November 1946
CFS-316	- New England Landings, November 1946
CFS-317	- Canned Fish Meal and Oil - 1946 Preliminary Report
CFS-321	- Fish Meal and Oil, December 1946
CFS-323	- Vitamin A Report, November 1946
FL-213	- Wrapping Materials for Frozen Fish
SL-22 (Revised)	- Wholesale Dealers in Fishery Products, Oregon, 1946
SL-23 (Revised)	- Wholesale Dealers in Fishery Products, Washington, 1946
SL-28 (Revised)	- Wholesale Dealers in Fishery Products, Michigan, 1947

Reprints (Features) from Commercial Fisheries Review, February 1947.

- Sep. No. 164 - The Electrostatic Smoking of Sardines
- Sep. No. 165 - Shallower Storage Pens Improve Fish Quality
- Sep. No. 166 - Toughening of Frozen Crab Meat Can Be Retarded
- Sep. No. 167 - Studies on Deterioration of Vitamin A in Fish Livers and Liver Oils

Designations for fishery publications are interpreted as follows:

CFS - Current fishery statistics of the United States and Alaska.

SL - Statistical lists, consisting of lists of dealers of fishery products and manufacturers of byproducts.

FL - Fishery leaflets.

MDL - Market development lists of frozen food locker plants and locker associations.



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